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CALIFORNIA BUILDING STANDARDS COMMISSION

CALIFORNIA 2025 BUILDING CODE

CALIFORNIA CODE OF REGULATIONS | TITLE 24 PART 2
VOLUME 1 OF 2

BASED ON THE 2024 INTERNATIONAL BUILDING CODE®

INTERNATIONAL CODE COUNCIL®

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CALIFORNIA BUILDING STANDARDS COMMISSION

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CALIFORNIA BUILDING CODE 2025

CALIFORNIA CODE OF REGULATIONS ▯ TITLE 24 PART 2

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Effective January 1, 2026

For Errata and Supplement effective dates see the History Note Appendix

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PREFACE

This document is Part 2 of thirteen parts of the official triennial compilation and publication of the adoptions, amendments and repeal of administrative regulations to *California Code of Regulations, Title 24,* also referred to as the *California Building Standards Code.* This part is known as the *California Building Code.*

The *California Building Standards Code* is published in its entirety every three years by order of the California legislature, with supplements published in intervening years. The California legislature delegated authority to various state agencies, boards, commissions and departments to create building regulations to implement the State's statutes. These building regulations, or standards, have the same force of law, and take effect 180 days after their publication unless otherwise stipulated. The *California Building Standards Code* applies to occupancies in the State of California as annotated.

A city, county, or city and county may establish more restrictive building standards reasonably necessary because of local climatic, geological or topographical conditions. Findings of the local condition(s) and the adopted local building standard(s) must generally be filed with the California Building Standards Commission (or other filing if indicated) to become effective, and may not be effective sooner than the effective date of this edition of the *California Building Standards Code*. Local building standards that were adopted and applicable to previous editions of the *California Building Standards Code* do not apply to this edition without appropriate adoption and the required filing.

Should you find publication (e.g., typographical) errors or inconsistencies in this code or wish to offer comments toward improving its format, please address your comments to:

California Building Standards Commission
2525 Natomas Park Drive, Suite 130
Sacramento, CA 95833-2936

Phone: (916) 263-0916
Email: cbsc@dgs.ca.gov

Web page: www.dgs.ca.gov/bsc

ACKNOWLEDGMENTS

The 2025 *California Building Standards Code* (Code) was developed through the outstanding collaborative efforts of the Department of Housing and Community Development, Division of the State Architect, Office of the State Fire Marshal, Department of Health Care Access and Information, California Energy Commission, California Department of Public Health, California State Lands Commission, Board of State and Community Corrections, Department of Water Resources, State Historical Building Safety Board, Department of Consumer Affairs, State Librarian, Department of Food and Agriculture, and the California Building Standards Commission (Commission).

This collaborative effort included the assistance of the Commission's Code Advisory Committees and many other volunteers who worked tirelessly to assist the Commission in the production of this Code.

Governor Gavin Newsom

Members of the California Building Standards Commission

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For questions on California state agency amendments, please refer to the contact list on page v.

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CALIFORNIA CODE OF REGULATIONS, TITLE 24

California State Agency Contact List

The following state agencies may propose building standards for buildings, structures and applications under their authority for publication in Title 24. Notice of such proposals may be requested from each agency. See Sections 1.2 through 1.14 of the California Building Code (Part 2, T24) for detailed information on the regulatory authority of most state agencies summarized below. Note [agency acronyms] shown in banners/Matrix Adoption Tables in T24.

Board of State and Community Corrections [BSCC]
bscc.ca.gov — BSCC-Mail@bscc.ca.gov
(916) 445-5073 — *Local Detention Facilities*

Building Standards Commission [BSC, BSC-CG]
dgs.ca.gov/BSC — cbsc@dgs.ca.gov
(916) 263-0916 — *State Buildings including UC & CSU Nonresidential Green Building Standards*

Department of Consumer Affairs Boards/Bureaus:

Acupuncture Board [CA]
acupuncture.ca.gov — AcuPolicy@dca.ca.gov
(916) 515-5200 — *Acupuncture Offices*

Board of Pharmacy [CA]
pharmacy.ca.gov
(916) 518-3100 — *Pharmacies*

Board of Barbering and Cosmetology [CA]
barbercosmo.ca.gov — barbercosmo@dca.ca.gov
(916) 574-7570 — *Barber, Cosmetology & Electrolysis Establishments*

Bureau of Household Goods and Services [CA]
bhgs.dca.ca.gov
(916) 999-2041 — *Insulation Testing*

Structural Pest Control Board [CA]
pestboard.ca.gov — pestboard@dca.ca.gov
(800) 737-8188 — *Structural Pest Control Locations*

Veterinary Medical Board [CA]
vmb.ca.gov — vmb@dca.ca.gov
(916) 515-5220 — *Veterinary Facilities*

Department of Food and Agriculture [AGR]
cdfa.ca.gov
(916) 900-5004 — *Rendering & Collection Centers*
(916) 900-5064 — *Meat & Poultry Packing Plants*
(916) 900-5008 — *Milk & Dairy Food Safety*

Department of Health Care Access and Information
Office of Statewide Hospital Planning and Development
[OSHPD 1, 1R, 2, 3, 4, 5, 6]
hcai.ca.gov — regsunit@hcai.ca.gov
(916) 440-8300 — *Hospital Standards, Skilled Nursing Facility Standards & Clinic Standards*

Department of Public Health [DPH]
cdph.ca.gov (Recreational Health)
(916) 449-5661 — *Food Establishments, Organized Camps, Public Swimming Pools*

Department of Housing and Community Development
[HCD 1, 2, 1-AC]
hcd.ca.gov — Title24@hcd.ca.gov
(800) 952-8356
Option 5 > Option 2 — *State Housing Law: including Housing Accessibility, Hotels/Motels, Apartments/Condominiums, Dormitories, Single-Family Dwellings, ADUs, Permanent Structures in Mobile Home Parks*
Option 5 > Option 4 — *Factory-Built Housing*
Option 5 > Option 5 — *Employee Housing*

Department of Water Resources [DWR]
water.ca.gov — DWRwebcomment@water.ca.gov
(916) 653-5791 — *Plumbing for Recycled Water, Floodplain Construction*

Division of the State Architect
dgs.ca.gov/DSA
(916) 445-8100

Access Compliance [DSA-AC]
(916) 445-5827 — DSAaccess@dgs.ca.gov
Access for Persons with Disabilities

Structural Safety [DSA-SS, DSA-SS/CC]
Public Schools & Community Colleges, State Essential Services Buildings

State Historical Building Safety Board [SHBSB]
(916) 445-7627 — shbsb@dgs.ca.gov
Historical Building Rehabilitation, Preservation, Restoration or Relocation

Energy Commission [CEC]
energy.ca.gov — Title24@energy.ca.gov
(800) 772-3300 — *Building Energy Efficiency, Compliance Manual & Compliance Forms*

Office of the State Fire Marshal [SFM]
osfm.fire.ca.gov — codedevelopment@fire.ca.gov
(916) 568-3800 — *Fire & Life Safety*

State Lands Commission [SLC]
slc.ca.gov — MOTEMS.Public@slc.ca.gov
(510) 741-4950 — *Marine Oil Terminals*

State Librarian [SL]
library.ca.gov — csllaw@library.ca.gov
(916) 323-9843 — *Public Library Construction & Renovation*

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How to Distinguish Between Model Code Language and California Amendments

To distinguish between model code language and the incorporated California amendments, including exclusive California standards, California amendments will appear in italics.

***[BSC]** This is an example of a state agency acronym used to identify an adoption or amendment by the agency. The acronyms will appear at California Amendments and in the Matrix Adoption Tables. Sections 1.2 through 1.14 in Chapter 1, Division 1 of this code, explain the used acronyms, the application of state agency adoptions to building occupancies or building features, the enforcement agency as designated by state law (may be the state adopting agency or local building or fire official), the authority in state law for the state agency to make the adoption, and the specific state law being implemented by the agency's adoption. The following acronyms are used in Title 24 to identify the state adopting agency making an adoption.*

Legend of Acronyms of Adopting State Agencies

BSC	*California Building Standards Commission (see Section 1.2)*
BSC-CG	*California Building Standards Commission-CALGreen (see Section 1.2.2)*
BSCC	*Board of State and Community Corrections (see Section 1.3)*
SFM	*Office of the State Fire Marshal (see Section 1.11)*
HCD 1	*Department of Housing and Community Development (see Section 1.8.2.1.1)*
HCD 2	*Department of Housing and Community Development (see Section 1.8.2.1.3)*
HCD 1/AC	*Department of Housing and Community Development (see Section 1.8.2.1.2)*
DSA-AC	*Division of the State Architect-Access Compliance (see Section 1.9.1)*
DSA-SS	*Division of the State Architect-Structural Safety (see Section 1.9.2)*
DSA-SS/CC	*Division of the State Architect-Structural Safety/Community Colleges (see Section 1.9.2.2)*
OSHPD 1	*Office of Statewide Hospital Planning and Development (see Section 1.10.1)*
OSHPD 1R	*Office of Statewide Hospital Planning and Development (see Section 1.10.1)*
OSHPD 2	*Office of Statewide Hospital Planning and Development (see Section 1.10.2)*
OSHPD 3	*Office of Statewide Hospital Planning and Development (see Section 1.10.3)*
OSHPD 4	*Office of Statewide Hospital Planning and Development (see Section 1.10.4)*
OSHPD 5	*Office of Statewide Hospital Planning and Development (see Section 1.10.5)*
OSHPD 6	*Office of Statewide Hospital Planning and Development (see Section 1.10.6)*
DPH	*Department of Public Health (see Section 1.7)*
AGR	*Department of Food and Agriculture (see Section 1.6)*
CEC	*California Energy Commission (see Section 100 in Part 6, the California Energy Code)*
CA	*Department of Consumer Affairs (see Section 1.4):* *Board of Barbering and Cosmetology* *Board of Examiners in Veterinary Medicine* *Board of Pharmacy* *Acupuncture Board* *Bureau of Household Goods & Services* *Structural Pest Control Board (SPCB)*
SL	*State Library (see Section 1.12)*
SLC	*State Lands Commission (see Section 1.14)*
DWR	*Department of Water Resources (see Section 1.13 of Chapter 1 of the California Plumbing Code in Part 5 of Title 24)*

The state agencies are available to answer questions about their adoptions. Contact information is provided on page v of this code.

To learn more about the use of this code, refer to pages vii through ix. Training materials on the application and use of this code are available at the website of the California Building Standards Commission www.dgs.ca.gov/bsc.

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California Matrix Adoption Tables

Format of the California Matrix Adoption Tables

The matrix adoption tables, examples of which follow, are nonregulatory aids intended to show the user which state agencies have adopted and/or amended given sections of the model code. An agency's statutory authority for certain occupancies or building applications determines which chapter or section may be adopted, repealed, amended or added. See Chapter 1, Division I, Sections 1.2 through 1.14 for agency authority, building applications and enforcement responsibilities.

The side headings identify the scope of state agencies' adoption as follows:

Adopt the entire IBC chapter without state amendments.

If there is an "X" under a particular state agency's acronym on this row, this means that particular state agency has adopted the entire model code chapter without any state amendments.

Example:

CALIFORNIA BUILDING CODE-MATRIX ADOPTION TABLE
CHAPTER 2 – DEFINITIONS AND ABBREVIATIONS
(Matrix Adoption Tables are nonregulatory, intended only as an aid to the user.
See Chapter 1 for state agency authority and building applications.)

Adopting agency	BSC	BSC-CG	SFM	HCD			DSA			OSHPD							BSCC	DPH	AGR	DWR	CEC	CA	SL	SLC
				1	2	1-AC	AC	SS	SS/CC	1	1R	2	3	4	5	6								
Adopt entire chapter			X																					
Adopt entire chapter as amended (amended sections listed below)																								
Adopt only those sections that are listed below								S	A	M	P	L	E											
Chapter/Section																								

Adopt the entire IBC chapter as amended, state-amended sections are listed below:

If there is an "X" under a particular state agency's acronym on this row, it means that particular state agency has adopted the entire model code chapter; with state amendments.

Each section that a state agency has amended and/or added within a particular chapter is listed. There will be an "X" under an agency's acronym in the row of the amended and/or added section.

Example:

CHAPTER 2 – DEFINITIONS AND ABBREVIATIONS

Adopting agency	BSC	BSC-CG	SFM	HCD			DSA			OSHPD							BSCC	DPH	AGR	DWR	CEC	CA	SL	SLC
				1	2	1-AC	AC	SS	SS/CC	1	1R	2	3	4	5	6								
Adopt entire chapter																								
Adopt entire chapter as amended (amended sections listed below)			X																					
Adopt only those sections that are listed below								S	A	M	P	L	E											
Chapter/Section																								
202			X																					

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Adopt only those sections that are listed below:

If there is an "X" under a particular state agency's acronym on this row, it means that particular state agency is adopting only specific model code or state-amended sections within this chapter. There will be an "X" in the column under the agency's acronym, as well as an "X" by each section that the agency has adopted.

Example:

CHAPTER 2 – DEFINITIONS AND ABBREVIATIONS

Adopting agency	BSC	BSC-CG	SFM	HCD			DSA			OSHPD							BSCC	DPH	AGR	DWR	CEC	CA	SL	SLC
				1	2	1-AC	AC	SS	SS/CC	1	1R	2	3	4	5	6								
Adopt entire chapter																								
Adopt entire chapter as amended (amended sections listed below)																								
Adopt only those sections that are listed below					**X**	**X**		S	A	M	P	L	E											
Chapter/Section																								
202					X	X																		
203					X	X																		

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MARGINAL MARKINGS

Symbols in the margin indicate the status of code changes as follows:

‖ This symbol indicates that a change has been made to a California amendment.

> This symbol indicates deletion of California amendment language.

| This symbol indicates that a change has been made to International Code Council model language.

➡ This symbol indicates deletion of International Code Council model language.

A single asterisk [*] placed in the margin indicates that text or a table has been relocated within the code. A double asterisk [**] placed in the margin indicates that the text or table immediately following it has been relocated there from elsewhere in the code.

RELOCATION OF TEXT OR TABLES

The following table indicates relocation of sections and tables in the 2024 edition of the IBC from the 2021 edition.

RELOCATIONS	
2024 LOCATION	**2021 LOCATION**
104.2.3	104.11
104.2.3.5	104.11.2
104.2.3.6	104.11.1
104.2.4	104.10
104.2.4.1	104.10.1
104.4	104.6
705.1	705.9
705.11	705.1
1110.6	E105.2
1110.6.1	E105.2.1
1110.6.2	E105.2.2
1110.15	1110.12.2
1110.15.1	1110.12.2.1
1112.6	E107.2
1402.3.1	1403.14
1403.9	1403.10
1404.5	1404.17
1404.5.1	2603.11
1404.5.2	2603.12
1404.5.2.1	2603.12.1
Table 1404.5.2.1	Table 2603.12.1
1404.5.2.2	2603.12.2
Table 1404.5.2.2	Table 2603.12.2
1404.5.3	2603.13
1404.5.3.1	2603.13.1
Table 1404.5.3.1	Table 2603.13.1
1404.5.3.2	2603.13.2
Table 1404.5.3.2	Table 2603.13.2
1607.22	1607.14.3
1607.22.1	1607.14.3.1
1607.22.2	1607.14.3.2
1607.22.3	1607.14.3.3
1607.22.4	1607.14.3.4
1607.22.5	1607.14.3.5
1607.10	1607.17
1607.11	1607.10
1607.17	1607.18
1607.19	1607.20

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RELOCATIONS—continued	
2024 LOCATION	**2021 LOCATION**
1607.20	1607.21
1607.21	1607.22
1613.3	1613.2.5.2
2214	2208
2308.7	2308.3
2308.8	2308.4
2308.9	2308.5
2308.10	2308.6
2308.11	2308.7
3301.3	3301.2.1
3301.4	3302.1

ABOUT THE I-CODES

The 2024 I-Codes, published by the ICC, are 15 fully compatible titles intended to establish provisions that adequately protect public health, safety and welfare; that do not unnecessarily increase construction costs; that do not restrict the use of new materials, products or methods of construction; and that do not give preferential treatment to particular types or classes of materials, products or methods of construction.

The I-Codes are updated on a 3-year cycle to allow for new construction methods and technologies to be incorporated into the codes. Alternative materials, designs and methods not specifically addressed in the I-Code can be approved by the building official where the proposed materials, designs or methods comply with the intent of the provisions of the code.

The I-Codes are used as the basis of laws and regulations in communities across the US and in other countries. They are also used in a variety of nonregulatory settings, including:

- Voluntary compliance programs.
- The insurance industry.
- Certification and credentialing for building design, construction and safety professionals.
- Certification of building and construction-related products.
- Facilities management.
- “Best practices” benchmarks for designers and builders.
- College, university and professional school textbooks and curricula.
- Reference works related to building design and construction.

Code Development Process

The code development process regularly provides an international forum for building professionals to discuss requirements for building design, construction methods, safety, performance, technological advances and new products. Proposed changes to the I-Codes, submitted by code enforcement officials, industry representatives, design professionals and other interested parties are deliberated through an open code development process in which all interested and affected parties may participate.

Openness, transparency, balance, due process and consensus are the guiding principles of both the ICC Code Development Process and OMB Circular A-119, which governs the federal government’s use of private-sector standards. The ICC process is open to anyone without cost. Remote participation is available through cdpAccess®, the ICC’s cloud-based app.

In order to ensure that organizations with a direct and material interest in the codes have a voice in the process, the ICC has developed partnerships with key industry segments that support the ICC’s important public safety mission. Some code development committee members were nominated by the following industry partners and approved by the ICC Board:

- American Gas Association (AGA)
- American Institute of Architects (AIA)
- American Society of Plumbing Engineers (ASPE)
- International Association of Fire Chiefs (IAFC)
- National Association of Home Builders (NAHB)
- National Association of State Fire Marshals (NASFM)
- National Council of Structural Engineers Association (NCSEA)
- National Multifamily Housing Council (NMHC)
- Plumbing Heating and Cooling Contractors (PHCC)
- Pool and Hot Tub Alliance (PHTA), formerly The Association of Pool and Spa Professionals (APSP)

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Code development committees evaluate and make recommendations regarding proposed changes to the codes. Their recommendations are then subject to public comment and council-wide votes. The ICC's governmental members—public safety officials who have no financial or business interest in the outcome—cast the final votes on proposed changes.

The I-Codes are subject to change through future code development cycles and by any governmental entity that enacts the code into law. For more information regarding the code development process, contact the Codes and Standards Development Department of the ICC at iccsafe.org/products-and-services/i-codes/code-development/.

While the I-Code development procedure is thorough and comprehensive, the ICC, its members and those participating in the development of the codes expressly disclaim any liability resulting from the publication or use of the I-Codes, or from compliance or noncompliance with their provisions. NO WARRANTY OF ANY KIND, IMPLIED, EXPRESSED OR STATUTORY, IS GIVEN WITH RESPECT TO THE I-CODES. The ICC does not have the power or authority to police or enforce compliance with the contents of the I-Codes.

Code Development Committee Responsibilities (Letter Designations in Front of Section Numbers)

In each cycle, proposed changes are considered by the Code Development Committee assigned to a specific code or subject matter. Committee Action Hearings result in recommendations regarding a proposal to the voting membership. Where changes to a code section are not considered by that code's own committee, the code section is preceded by a bracketed letter designation identifying a different committee. Bracketed letter designations for the I-Code committees are:

[A] = Administrative Code Development Committee
[BE] = IBC—Egress Code Development Committee
[BF] = IBC—Fire Safety Code Development Committee
[BG] = IBC—General Code Development Committee
[BS] = IBC—Structural Code Development Committee
[E] = Developed under the ICC's Standard Development Process
[EB] = International Existing Building Code Development Committee
[F] = International Fire Code Development Committee
[FG] = International Fuel Gas Code Development Committee
[M] = International Mechanical Code Development Committee
[P] = International Plumbing Code Development Committee
[SP] = International Swimming Pool and Spa Code Development Committee

For the development of the 2027 edition of the I-Codes, the ICC Board of Directors approved a standing motion from the Board Committee on the Long-Term Code Development Process to revise the code development cycle to incorporate two committee action hearings for each code group. This change expands the current process from two independent 1-year cycles to a single continuous 3-year cycle. There will be two groups of code development committees and they will meet in separate years. The current groups will be reworked. With the energy provisions of the *International Energy Conservation Code*® (IECC®) and Chapter 11 of the *International Residential Code*® (IRC®) now moved to the Code Council's Standards Development Process, the reduced volume of code changes will be distributed between Groups A and B.

Code change proposals submitted for code sections that have a letter designation in front of them will be heard by the respective committee responsible for such code sections. Because different committees hold Committee Action Hearings in different years, proposals for most codes will be heard by committees in both the 2024 (Group A) and the 2025 (Group B) code development cycles. It is very important that anyone submitting code change proposals understands which code development committee is responsible for the section of the code that is the subject of the code change proposal.

Please visit the ICC website at iccsafe.org/products-and-services/i-codes/code-development/current-code-development-cycle for further information on the Code Development Committee responsibilities as it becomes available.

Coordination of the I-Codes

The coordination of technical provisions allows the I-Codes to be used as a complete set of complementary documents. Individual codes can also be used in subsets or as stand-alone documents. Some technical provisions that are relevant to more than one subject area are duplicated in multiple model codes.

INTRODUCTION TO THE INTERNATIONAL BUILDING CODE

The *International Building Code* establishes minimum requirements for building systems using prescriptive and performance-related provisions. It is founded on broad-based principles that make possible the use of new materials and new building designs.

The IBC is a model code that provides minimum requirements to safeguard the public health, safety and general welfare of the occupants of new and existing buildings and structures. It addresses structural strength, means of egress, sanitation, adequate lighting and ventilation, accessibility, energy conservation and life safety in regard to new and existing buildings, facilities and systems.

The IBC applies to all occupancies, including one- and two-family dwellings and townhouses that are not within the scope of the *IRC*. The *IRC* is referenced for coverage of detached one- and two-family dwellings and townhouses as defined in the exception to Section 101.2 and the definition for "*Townhouse*" in Chapter 2. The *IRC* can also be used for the construction of live/work units (as

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defined in Section 508.5) and small bed and breakfast-style hotels where there are five or fewer guestrooms and the hotel is owner-occupied. The IBC applies to all types of buildings and structures unless exempted. Work exempted from permits is listed in Section 105.2.

ARRANGEMENT AND FORMAT OF THE 2025 CBC

The format of the CBC allows each chapter to be devoted to a particular subject. The following table shows how the CBC is divided. The subsequent tables show CBC requirements that are correlated with other Codes. The chapter synopses detail the scope and intent of the provisions of the CBC.

CHAPTER TOPICS	
CHAPTERS	**SUBJECTS**
1, 2	Administration and Definitions
3	Use and Occupancy Classifications
4, 31, *31A–31F*	Special Requirements for Specific Occupancies or Elements
5–6	Height and Area Limitations Based on Type of Construction
7–9	Fire Resistance and Protection Requirements
10	Requirements for Evacuation
11A, 11B	Specific Requirements to Allow Use and Access to a Building for Persons with Disabilities
12, 27, *28,* 30	Building Systems, Such as Lighting, HVAC, Elevators
13	*This chapter is not adopted in California. Refer to California Energy Code, Title 24, Part 6.*
14–26	Structural Components—Performance and Stability
32	Encroachment Outside of Property Lines
33	Safeguards during Construction
35	Referenced Standards
Appendices A–*Q*	Appendices

INTERNATIONAL FIRE CODE CORRELATED TOPICS

The IBC requirements for hazardous materials, fire-resistance-rated construction, interior finish, fire protection systems, means of egress, emergency and standby power, and temporary structures are directly correlated with the requirements of the *International Fire Code*® (IFC®). The following table shows chapters/sections of the IBC that are correlated with the IFC:

IBC/IFC CORRELATED TOPICS		
IBC CHAPTER/SECTION	**IFC CHAPTER/SECTION**	**SUBJECT**
Sections 307, 414, 415	Chapters 50–67	Hazardous materials and Group H requirements
Chapter 7	Chapter 7	Fire-resistance-rated construction (fire and smoke protection features in the IFC)
Chapter 8	Chapter 8	Interior finish, decorative materials and furnishings
Chapter 9	Chapter 9	Fire protection systems
Chapter 10	Chapter 10	Means of egress
Chapter 27	Section 604	Standby and emergency power
Section 3103	Chapter 31	Temporary structures

Chapter 1 Scope and Administration.

Chapter 1 establishes the limits of applicability of the code and describes how the code is to be applied and enforced. The provisions of Chapter 1 establish the authority and duties of the code official appointed by the authority having jurisdiction and also establish the rights and privileges of the design professional, contractor and property owner.

Chapter 2 Definitions.

Chapter 2 is the repository of the definitions of terms used in the body of the code. The user of the code should be familiar with and consult this chapter because the definitions are essential to the correct interpretation of the code and because the user may not be aware that a term is defined.

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Chapter 3 Occupancy Classification and Use.

Chapter 3 provides for the classification of buildings, structures and parts thereof based on the purpose for which they are used. Section 302 identifies the groups into which all buildings, structures and parts thereof must be classified. Sections 303 through 312 identify the occupancy characteristics of each group classification. In some sections, specific group classifications having requirements in common are collectively organized such that one term applies to all. For example, Groups A-1, A-2, A-3, A-4 and A-5 are individual groups for assembly-type buildings. The general term “Group A,” however, includes each of these individual groups. Other groups include Business (B), *Organized Camps (C),* Educational (E), Factory (F-1, F-2), High Hazard (H-1, H-2, H-3, H-4, H-5), Institutional (I-2, I-3, I-4), *Laboratories (L),* Mercantile (M), Residential (R-1, R-2, *R-2.1, R-2.2,* R-3, *R-3.1,* R-4), Storage (S-1, S-2) and Utility (U). In some occupancies, the smaller number means a higher hazard, but that is not always the case.

Defining the use of the buildings is very important as it sets the tone for the remaining chapters of the code. Occupancy works with the height, area and construction type requirements in Chapters 5 and 6, to determine "equivalent risk." The determination of equivalent risk involves three interdependent considerations: (1) the level of fire hazard associated with the specific occupancy of the facility; (2) the reduction of fire hazard based on the fuel load by limiting the floor area and the height of the building; and (3) the level of overall fire resistance provided by the type of construction. The greater the potential fire hazards indicated as a function of the group, the lesser the height and area allowances for a particular construction type.

Occupancy classification also plays a key part in the appropriate protection measures. As such, threshold requirements for fire protection and means of egress systems are based on occupancy classification (see Chapters 9 and 10). Other sections of the code also contain requirements respective to the classification of building groups. For example, Section 706 specifies requirements for fire wall fire-resistance ratings that are tied to the occupancy classification of a building and Section 803.11 contains interior finish requirements that are dependent upon the occupancy classification. The use of the space, rather than the occupancy of the building, is utilized for determining occupant loading (Section 1004) and live loading (Section 1607).

Chapter 4 Special Detailed Requirements Based on Occupancy and Use.

Chapter 4 contains the requirements for protecting special uses and occupancies which are supplemental to the remainder of the code. For example, the height and area limitations established in Chapter 5 apply to all special occupancies unless Chapter 4 contains height and area limitations. In this case, the limitations in Chapter 4 supersede those in other sections. An example of this is the height and area limitations for open parking garages given in Section 406.5.4, which supersede the limitations given in Sections 504 and 506.

In some instances, it may not be necessary to apply the provisions of Chapter 4. For example, if a covered mall building complies with the provisions of the code for Group M, Section 402 does not apply; however, other sections that address a use, process or operation must be applied to that specific occupancy, such as stages and platforms, special amusement buildings and hazardous materials (Sections 410, 411 and 414).

The chapter includes requirements for buildings and conditions that apply to one or more groups, such as high-rise buildings, underground buildings or atriums. Special uses may also imply specific occupancies and operations, such as for Group H, hazardous materials, and uses with associated combustibility hazards, which are coordinated with the CFC. Unique consideration is taken for special use areas, such as covered mall buildings, motor-vehicle-related occupancies, special amusement buildings and aircraft-related occupancies. Special facilities within other occupancies are considered, such as stages and platforms, motion picture projection rooms, children’s play structures and storm shelters. Finally, in order that the overall package of protection features can be easily understood, unique considerations for specific occupancies are *also* addressed.

Chapter 5 General Building Heights and Areas.

Chapter 5 contains the provisions that regulate the minimum type of construction for area limits and height limits based on the occupancy of the building. Height and area increases are permitted based on open frontage for fire department access, separation and the type of sprinkler protection provided (Sections 503 through 506, 510). Provisions include the protection and/or separation of incidental uses (Table 509.1), accessory occupancies (Section 508.2) and mixed uses in the same building (Sections 506.2.2, 508.3, 508.4 and 510). Unlimited area buildings are permitted in certain occupancies when they meet special provisions (Section 507). Live/work units are provided for in Section 508.5.

Tables 504.3, 504.4 and 506.2 are the keystones in setting thresholds for building size based on the building’s use and the materials with which it is constructed. Respective to each group classification, the greater the fire-resistance rating of structural elements, as represented by the type of construction, the greater the floor area and height allowances. The greater the potential fire hazards indicated as a function of the group, the lesser the height and area allowances for a particular construction type.

Chapter 6 Types of Construction.

The interdependence of fire safety considerations can be seen by looking at Tables 601 and 705.5, which show the fire-resistance ratings of the principal structural elements comprising a building in relation to the five classifications for types of construction. Type I construction generally requires the highest fire-resistance ratings for structural elements, whereas Type V construction generally requires the least amount of fire-resistance-rated structural elements. The greater the potential fire hazards indicated as a function of the group, the lesser the height and area allowances for a particular construction type. Section 603 includes a list of combustible elements that can be part of a noncombustible building (Types I and II construction).

Chapter 7 Fire and Smoke Protection Features.

Chapter 7 provisions present the fundamental concepts of fire performance that all buildings are expected to achieve in some form. This chapter identifies the acceptable materials, techniques and methods by which proposed construction can be designed and evaluated against to determine a building's ability to limit the impact of fire.

Chapter 7A Materials and Construction Methods for Exterior Wildfire Exposure.

Requirements for Wildland-Urban Interface Areas are now located in Part 7 of Title 24, California Wildland-Urban Interface Code. The provisions of Part 7, California Wildland-Urban Interface Code, shall apply to buildings and structures located in the wildland-urban interface (WUI) or Fire Hazard Severity Zone.

Chapter 8 Interior Finishes.

Chapter 8 contains the performance requirements for controlling fire growth within buildings by restricting interior finish and decorative materials. The provisions of Chapter 8 require materials used as interior finishes and decorations to meet certain flame-spread index or flame-propagation criteria based on the relative fire hazard associated with the occupancy.

Chapter 9 Fire Protection and Life Safety Systems.

Chapter 9 prescribes the minimum requirements for active systems of fire protection equipment to perform the following functions: detect a fire, alert the occupants or fire department of a fire emergency, and control smoke and control or extinguish the fire. Generally, the requirements are based on the occupancy, the height and the area of the building, because these are the factors that most affect firefighting capabilities and the relative hazard of a specific building or portion thereof. This chapter parallels and is substantially duplicated in Chapter 9 of the CFC; however, the CFC Chapter 9 also contains periodic testing criteria that are not contained in the CBC. In addition, the special fire protection system requirements based on use and occupancy found in CBC Chapter 4 are duplicated in CFC Chapter 9 as a user convenience.

Chapter 10 Means of Egress.

The criteria in Chapter 10 regulating the design of the means of egress system are established as the primary method for protection of occupants by allowing timely relocation or evacuation. Both prescriptive and performance language is utilized for determination of a safe exiting system. It addresses all portions of the means of egress system (i.e., exit access, exits and exit discharge) and includes design requirements as well as provisions regulating individual components. The requirements detail the size, arrangement, number and protection of means of egress components. The means of egress protection requirements work in coordination with other sections of the code, such as protection of vertical openings (see Chapter 7), interior finish (see Chapter 8), fire suppression and detection systems (see Chapter 9) and numerous others, all having an impact on life safety. Chapter 10 of the CBC is duplicated in Chapter 10 of the CFC; however, the CFC contains one additional section on the maintenance of the means of egress system in existing buildings.

Chapter 11 ***Reserved.***

Chapter 11A Housing Accessibility.
Chapter 11B Accessibility to Public Buildings, Public Accommodations, Commercial Buildings and Public Housing.

Verify compliance with accessibility provisions. In order to be considered as accessible, buildings and their individual elements must comply with the applicable scoping and technical provisions of Chapter 11A and/or Chapter 11B.

Chapter 12 Interior Environment.

Chapter 12 provides minimum standards for the interior environment of a building. The standards address the minimum sizes of spaces, as well as minimums for temperature, light and ventilation. Concerns for sound transmission and acoustics are addressed. Finally, the chapter provides minimum standards for toilet and bathroom construction.

Chapter 13 Energy Efficiency.

Chapter 13 is not adopted in California. Refer to California Energy Code, Title 24, Part 6.

Chapter 14 Exterior Walls.

Chapter 14 addresses requirements for exterior walls of buildings. Minimum standards for wall covering materials, installation of wall coverings and the ability of the wall to provide weather protection are provided.

Chapter 15 Roof Assemblies and Rooftop Structures.

Chapter 15 provides standards for both roof assemblies and structures that sit on top of the roofs of buildings. The criteria address roof construction and covering, including the weather-protective barrier at the roof and, in most circumstances, a fire-resistant barrier.

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Chapter 16 Structural Design.

Chapter 16 prescribes minimum structural loading requirements for use in the design and construction of buildings and structural components. The chapter references and relies on many nationally recognized design standards, including the American Society of Civil Engineers' *Minimum Design Loads for Buildings and Other Structures* (ASCE 7).

Chapter 16A Structural Design.

Chapter 16A prescribes minimum structural loading requirements for use in the design and construction of structures regulated by the Division of the State Architect—Structural Safety, which include public elementary and secondary schools, community colleges, and state-owned or state-leased essential services buildings (applications listed in Section 1.9.2.1 (DSA-SS)), and by the Department of Health Care Access and Information/Office of Statewide Hospital Planning and Development, which include hospitals and correctional treatment centers (applications listed in Sections 1.10.1 (OSHPD 1) and 1.10.4 (OSHPD 4)).

Chapter 17 Special Inspections and Tests.

Chapter 17 provides a variety of procedures and criteria for testing materials and assemblies, labeling materials and assemblies and special inspection of structural assemblies. This chapter expands on the inspections of Chapter 1 by requiring special inspection where indicated and, in some cases, structural observation.

Chapter 17A Special Inspections and Tests.

Chapter 17A provides a variety of procedures and criteria for testing materials and assemblies, labeling materials and assemblies, and special inspection of structural assemblies. Chapter 17A is applicable to structures regulated by the Division of the State Architect—Structural Safety, which include public elementary and secondary schools, community colleges, and state-owned or state-leased essential services buildings (applications listed in Sections 1.9.2.1 (DSA-SS) and 1.9.2.2 (DSA-SS/CC)), and by the Department of Health Care Access and Information/Office of Statewide Hospital Planning and Development, which include hospitals and correctional treatment centers (applications listed in Sections 1.10.1 (OSHPD 1) and 1.10.4 (OSHPD 4)).

Chapter 18 Soils and Foundations.

Chapter 18 provides criteria for geotechnical and structural considerations in the selection, design and installation of foundation systems to support the loads from the structure above.

Chapter 18A Soils and Foundations.

Chapter 18A provides criteria for geotechnical and structural considerations in the selection, design and installation of foundation systems to support the loads from the structure above. Chapter 18A is applicable to structures regulated by the Division of the State Architect—Structural Safety, which include public elementary and secondary schools, community colleges, and state-owned or state-leased essential services buildings (applications listed in Sections 1.9.2.1 (DSA-SS) and 1.9.2.2 (DSA-SS/CC)), and by the Department of Health Care Access and Information/Office of Statewide Hospital Planning and Development, which include hospitals and correctional treatment centers (applications listed in Sections 1.10.1 (OSHPD 1) and 1.10.4 (OSHPD 4)).

Chapter 19 Concrete.

Chapter 19 provides minimum accepted practices for the design and construction of buildings and structural components using concrete, both plain and reinforced. This chapter relies primarily on the reference to American Concrete Institute (ACI) 318, *Building Code Requirements for Structural Concrete*.

Chapter 19A Concrete.

Chapter 19A provides minimum accepted practices for the design and construction of buildings and structural components using concrete, both plain and reinforced. Chapter 19A is applicable to structures regulated by the Division of the State Architect—Structural Safety, which include public elementary and secondary schools, community colleges, and state-owned or state-leased essential services buildings (applications listed in Section 1.9.2.1 (DSA-SS)), and by the Department of Health Care Access and Information/Office of Statewide Hospital Planning and Development, which include hospitals and correctional treatment centers (applications listed in Sections 1.10.1 (OSHPD 1) and 1.10.4 (OSHPD 4)).

Chapter 20 Aluminum.

Chapter 20 contains standards for the use of aluminum in building construction. This chapter references national standards from the Aluminum Association (AA) for use of aluminum in building construction, AA ASM 35, *Aluminum Sheet Metal Work in Building Construction*, and AA ADM, *Aluminum Design Manual*.

Chapter 21 Masonry.

Chapter 21 provides comprehensive and practical requirements for masonry construction.

Chapter 21A Masonry.

Chapter 21A provides comprehensive and practical requirements for masonry construction. Chapter 21A is applicable to structures regulated by the Division of the State Architect—Structural Safety, which include public elementary and secondary schools, community colleges, and state-owned or state-leased essential services buildings (applications listed in Section 1.9.2.1 (DSA-SS)), and by the Department of Health Care Access and Information/Office of Statewide Hospital Planning and Development, which include hospitals and correctional treatment centers (applications listed in Sections 1.10.1 (OSHPD 1) and 1.10.4 (OSHPD 4)).

Chapter 22 Steel.

Chapter 22 provides the requirements necessary for the design and construction of structural steel (including composite construction), cold-formed steel, steel joists, steel cable structures and steel storage racks. Chapter 22 requires that the design and use of steel materials be in accordance with the specifications and standards of the American Institute of Steel Construction, the American Iron and Steel Institute, the Steel Joist Institute and the American Society of Civil Engineers.

Chapter 22A Steel.

Chapter 22A provides the requirements necessary for the design and construction of structural steel (including composite construction), cold-formed steel, steel joists, steel cable structures and steel storage racks. Chapter 22A is applicable to structures regulated by the Division of the State Architect—Structural Safety, which include public elementary and secondary schools, community colleges, and state-owned or state-leased essential services buildings (applications listed in Section 1.9.2.1 (DSA-SS)), and by the Department of Health Care Access and Information/Office of Statewide Hospital Planning and Development, which include hospitals and correctional treatment centers (applications listed in Sections 1.10.1 (OSHPD 1) and 1.10.4 (OSHPD 4)).

Chapter 23 Wood.

Chapter 23 provides minimum requirements for the design of buildings and structures that use wood and wood-based products.

Chapter 24 Glass and Glazing.

Chapter 24 establishes regulations for glass and glazing that, when installed in buildings and structures, are subjected to wind, snow and dead loads.

Chapter 25 Gypsum Board, Gypsum Panel Products and Plaster.

Chapter 25 contains the provisions and referenced standards that regulate the design, construction and quality of gypsum board, gypsum panel products and plaster and reinforced gypsum concrete.

Chapter 26 Plastic.

Chapter 26 addresses the use of plastics in building construction and components. This chapter provides standards addressing foam plastic insulation, foam plastics used as interior finish and trim, and other plastic veneers used on the inside or outside of a building.

Chapter 27 Electrical.

Since electrical systems and components are an integral part of almost all structures, Chapter 27 references the *California Electrical Code (CEC).* In addition, Section 2702 addresses emergency and standby power requirements and references where they are required. Such systems must comply with the CFC and referenced standards.

Chapter 28 Mechanical Systems.

Nearly all buildings will include mechanical systems. Chapter 28 provides references to the *CMC and other codes* for the design and installation of mechanical systems. In addition, Chapter 21 of this code is referenced for masonry chimneys, fireplaces and barbecues.

Chapter 29 *Reserved*.

Chapter 30 Elevators and Conveying Systems.

Chapter 30 provides standards for the installation of elevators into buildings, including requirements for elevator shafts and lobbies. Referenced standards provide the requirements for the elevator system and mechanisms. Special provisions are indicated for fire service access elevators and for the optional choice of occupant evacuation elevators in high rise buildings (see Section 403).

Chapter 31 Special Construction.

Chapter 31 contains a collection of regulations for a variety of unique structures and architectural features. Pedestrian walkways and tunnels connecting two buildings are addressed in Section 3104. Safeguards for swimming pool safety are addressed in Section 3109. Standards for temporary structures, including permit requirements, are provided in Section 3103. Structures as varied as awnings, marquees, signs, telecommunication and broadcast towers and automatic vehicular gates are also addressed (see Sections 3105

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through 3108 and 3110). Unique types of buildings, such as membrane structures, greenhouses, relocatable buildings and intermodal shipping containers (Sections 3102, 3112, 3113 and 3114) are also addressed in this chapter.

Chapter 31A Systems for Window Cleaning or Exterior Building Maintenance.

See Title 8, California Code of Regulations, Division 1, Chapter 4, Subchapter 7, General Industry Safety Orders, Group 1, Articles 5 and 6.

Chapter 31B Public Pools.

Chapter 31B is promulgated by the California Department of Public Health and provides the requirements for the construction, installation, renovation, alteration, addition, relocation, replacement, or use of any public pool and to its ancillary facilities, mechanical equipment and related piping. Public pools include those located in or designated as the following: commercial building, hotel, motel, resort, recreational vehicle or mobile home park, campground, apartment house, condominium, townhouse, homeowner association, club, community building or area, public or private school, health club or establishment, water park, swim school, medical facility, bed and breakfast, licensed day-care facility, recreation and park district, and municipal pools.

Chapter 31C Radiation.

Chapter 31C is promulgated by the California Department of Public Health and focuses on radiation safety standards for buildings and equipment.

Chapter 31D Food Establishments.

Chapter 31D is promulgated by the California Department of Public Health. The provisions of this chapter apply to the construction of commissaries serving mobile food preparation units.

Chapter 31E Reserved.

Chapter 31F Marine Oil Terminals.

Chapter 31F is promulgated by the California State Lands Commission (SLC) and establishes minimum engineering, inspection and maintenance criteria for marine oil terminals (MOTs) in order to prevent oil spills and to protect public health, safety and the environment. The provisions of this chapter regulate onshore and offshore MOTs, including marine terminals that transfer liquefied natural gas (LNG) and are applicable to the evaluation of existing MOTs and design of new MOTs in California. The Marine Environmental Protection Division administers this chapter on behalf of the SLC.

Chapter 32 Encroachments into the Public Right-of-Way.

Buildings and structures may be designed to extend over a property line and into the public right-of-way. Local regulations outside of the building code usually set limits to such encroachments, and such regulations take precedence over the provisions of this chapter. Chapter 32 establishes parameters for such encroachments, not only at grade but also above and below grade. Pedestrian walkways must also comply with Chapter 31.

Chapter 33 Safeguards During Construction.

Chapter 33 provides safety requirements for the job site during construction and demolition of buildings and structures. In addition, it provides requirements intended to protect the public from injury and adjoining property from damage.

Chapter 34 Reserved.

Chapter 35 Referenced Standards.

Chapter 35 lists all of the product and installation standards and codes that are referenced throughout Chapters 1 through 33 and includes identification of the promulgators and the section numbers in which the standards and codes are referenced. As stated in Section 102.4, these standards and codes become an enforceable part of the code (to the prescribed extent of the reference) as if printed in the body of the code.

Appendix A Employee Qualifications.

Effective administration and enforcement of the family of International Codes depends on the training and expertise of the personnel employed by the jurisdiction and their knowledge of the codes. Section 103 of the code establishes the Department of Building Safety and calls for the appointment of a building official and deputies, such as plans examiners and inspectors. Appendix A provides standards for experience, training and certification for the building official and the other staff mentioned in Chapter 1.

Appendix B Board of Appeals.

Appendix B contains the provisions for appeal and the establishment of a board of appeals. The provisions include the application for an appeal, the makeup of the board of appeals and the conduct of the appeal process.

Appendix C Group U—Agricultural Buildings.

Appendix C provides special consideration for the construction of agricultural buildings reflective of their specific usage and limited occupant load. The provisions of this appendix allow reasonable heights and areas commensurate with the risk of agricultural buildings.

Appendix D Fire Districts.

Appendix D establishes a framework by which a jurisdiction can establish a portion of a jurisdiction as a fire district where limiting the potential spread of fire is a key consideration. Fire district standards restrict certain occupancies within the district, as well as setting higher minimum construction standards.

Appendix E *Reserved.*

Appendix F Rodentproofing.

The provisions of Appendix F are minimum mechanical methods to prevent the entry of rodents into a building.

Appendix G Flood-Resistant Construction.

Appendix G is intended to fulfill the flood-plain management and administrative requirements of the National Flood Insurance Program (NFIP) that are not included in the code. Communities that adopt the IBC and Appendix G will meet the minimum requirements of NFIP as set forth in Title 44 of the Code of Federal Regulations.

Appendix H Signs.

Appendix H gathers in one place the various code standards that regulate the construction and protection of outdoor signs.

Appendix I Patio Covers.

Appendix I provides standards applicable to the construction and use of patio covers. It is limited in application to patio covers accessory to dwelling units. Covers of patios and other outdoor areas associated with restaurants, mercantile buildings, offices, nursing homes or other nondwelling occupancies would be subject to standards in the main code and not this appendix.

Appendix J Grading.

Appendix J provides standards for the grading of properties. This appendix also provides standards for administration and enforcement of a grading program including permit and inspection requirements.

Appendix K *Group R-3 and Group R-3.1 Occupancies Protected by the Facilities of the Central Valley Flood Protection Plan.*

Appendix K provides provisions applicable to new construction, changes of use and to substantial improvement and restoration of substantial damage as defined in Section 1612 of Groups R-3 and R-3.1 located in areas protected by the facilities of the Central Valley Flood Protection Plan.

Appendix L Earthquake Recording Instrumentation.

The purpose of Appendix L is to foster the collection of ground motion data, particularly from strong-motion earthquakes. When this ground motion data is synthesized, it may be useful in developing future improvements to the earthquake provisions of the CBC.

Appendix M Tsunami-Generated Flood Hazards.

Addressing a tsunami risk for all types of construction in a tsunami hazard zone through building code requirements would typically not be cost effective, making tsunami-resistant construction impractical at an individual building level. However, Appendix M does allow the adoption and enforcement of requirements for tsunami hazard zones that regulate the presence of high-risk or high-hazard structures.

Appendix N Replicable Buildings.

Appendix N provides jurisdictions with a means of incorporating replicable building requirements contained in the ICC G1-2010, *Guideline for Replicable Buildings*, into their building code adoption process. The intent is to streamline the plan review process at the local level by removing redundant reviews.

Appendix O Performance-Based Application.

Appendix O provides an optional design, review and approval framework for use by the building official. It extracts relevant administrative provisions from the *International Code Council Performance Code® for Buildings and Facilities* (ICCPC®) into a more concise, usable appendix format for a jurisdiction confronted with such a need.

Appendix P Sleeping Lofts.

Appendix P provides allowances for, and limitations on, spaces intended to be used as sleeping lofts, while differentiating these spaces from mezzanines and other habitable spaces.

Appendix Q Emergency Housing.

This appendix shall be applicable to emergency housing and emergency housing facilities. Emergency sleeping cabins, emergency transportable housing units, membrane structures and tents constructed and assembled in accordance with this appendix shall be occupied only during declaration of state of emergency, local emergency or shelter crises. Buildings and structures constructed in accordance with the California Building Code, used as emergency housing, shall be permitted to be permanently occupied.

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CALIFORNIA BUILDING CODE – MATRIX ADOPTION TABLE
CHAPTER 1 – ADMINISTRATION

(Matrix Adoption Tables are nonregulatory, intended only as an aid to the code user.
See Chapter 1 for state agency authority and building applications.)

Adopting agency	BSC	BSC-CG	SFM	HCD			DSA			OSHPD							BSCC	DPH	AGR	DWR	CEC	CA	SL	SLC
				1	2	1/AC	AC	SS	SS/CC	1	1R	2	3	4	5	6								
Adopt entire chapter																								
Adopt entire chapter as amended (amended sections listed below)																								
Adopt only those sections that are listed below	**X**		**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**		**X**	**X**	**X**	**X**
Chapter / Section																								
Division I – California Administration																								
1.1	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X	X	X
1.2	X																							
1.2.3	X						X																	
1.3																	X							
1.4																						X		
1.6																			X					
1.7																		X						
1.8				X	X	X																		
1.9																								
1.9.1 – 1.9.1.8							X																	
1.9.2								X	X															
1.9.2.1								X																
1.9.2.2									X															
1.10.1										X	X													
1.10.2												X												
1.10.3													X											
1.10.4														X										
1.10.5															X									
1.10.6																X								
1.11			X																					
1.12																							X	
1.14																								X
Division II – Scope and Administration																								
101										X	X	X	X	X	X	X								
101.4.8			X																					
102								X	X	X	X	X	X	X	X	X								
102.4.3								X	X	X	X	X	X	X	X	X								
102.4.4								X	X	X	X	X	X	X	X	X								
102.6								†	†															
104										X	X	X	X	X	X	X								
104.2.3 – 104.2.4								X	X															
104.2.3.8										X				X										
104.9								X	X															
105.1 – 105.2										X	X	X	X	X	X	X								
105.2 Building: 1-13			X	X	X					†	†	†	†	†	†	†								
105.2.1 – 105.3.1			X							X	X	X	X	X	X	X								
105.3.2										X	X	X		X	X									

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CALIFORNIA BUILDING CODE – MATRIX ADOPTION TABLE
CHAPTER 1 – ADMINISTRATION—continued

Adopting agency	BSC	BSC-CG	SFM	HCD			DSA			OSHPD							BSCC	DPH	AGR	DWR	CEC	CA	SL	SLC
				1	2	1/AC	AC	SS	SS/CC	1	1R	2	3	4	5	6								
Adopt entire chapter																								
Adopt entire chapter as amended (amended sections listed below)																								
Adopt only those sections that are listed below	**X**		**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**		**X**	**X**	**X**	**X**
Chapter / Section																								
Division II – Scope and Administration-cont'd																								
105.4			X							X	X	X	X	X	X	X								
105.5										X	X	X	X	X	X	X								
105.5.1	X		X																					
105.6 – 105.7			X							X	X	X	X	X	X	X								
106.1			X					X	X	X	X	X	X	X	X	X								
106.1.1										X	X	X		X	X									
106.1.2								X	X															
106.2 – 106.3			X							X	X	X	X	X	X	X								
107.1			X	X	X					X	X	X	X	X	X	X								
107.2			X							X	X	X	X	X	X	X								
107.2.1			X	X	X					X	X	X			X									
107.2.3 –107.2.4			X	X	X																			
107.2.5			X	X	X			X	X															
107.2.6			X	X	X																			
107.2.6.1				X	X																			
107.2.7			X	X	X																			
107.3			X							X	X	X	X	X	X	X								
107.3.4.1										X	X	X		X	X									
107.4			X																					
107.5			X							X	X	X	X	X	X	X								
108.1 – 108.4			X							X	X	X	X	X	X	X								
109										X	X	X	X	X	X	X								
110.1 – 110.3			X							X	X	X	X	X	X	X								
110.3.1 – 110.3.3				X	X					X	X	X	X	X	X	X								
110.3.4			X	X	X					X	X	X	X	X	X	X								
110.3.4.1				X																				
110.3.5	X		X	X	X			X	X															
110.3.6			X	X	X					X	X	X	X	X	X	X								
110.3.7			X	X	X			X	X	X	X	X	X	X	X	X								
110.3.8				X	X					X	X	X	X	X	X	X								
110.3.10 – 110.3.11			X	X	X					X	X	X	X	X	X	X								
110.3.12 – 110.3.12.1				X	X																			
110.3.12.2				X	X																			
110.4 – 110.6			X							X	X	X	X	X	X	X								
111 – 112			X							X	X	X	X	X	X	X								
113										X	X	X	X	X	X	X								
114.1 – 114.2			X							X	X	X	X	X	X	X								
114.3										X	X	X	X	X	X	X								
115 – 116			X							X	X	X	X	X	X	X								

The state agency does not adopt sections identified by the following symbol: †

The Office of the State Fire Marshal's adoption of this chapter or individual sections is applicable to structures regulated by other state agencies pursuant to Section 1.11.

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CHAPTER

1 ADMINISTRATION

DIVISION I
CALIFORNIA ADMINISTRATION

SECTION 1.1—GENERAL

1.1.1 Title. *These regulations shall be known as the California Building Code, may be cited as such and will be referred to herein as "this code." The California Building Code is Part 2 of thirteen parts of the official compilation and publication of the adoption, amendment and repeal of building regulations to the California Code of Regulations, Title 24, also referred to as the California Building Standards Code. This part incorporates by adoption the 2024 International Building Code of the International Code Council with necessary California amendments.*

1.1.2 Purpose. *The purpose of this code is to establish the minimum requirements to safeguard the public health, safety and general welfare through structural strength, means of egress facilities, stability, access to persons with disabilities, sanitation, adequate lighting and ventilation and energy conservation; safety to life and property from fire and other hazards attributed to the built environment; and to provide safety to firefighters and emergency responders during emergency operations.*

1.1.3 Scope. *The provisions of this code shall apply to the construction, alteration, movement, enlargement, replacement, repair, equipment, use and occupancy, location, maintenance, removal and demolition of every building or structure or any appurtenances connected or attached to such buildings or structures throughout the State of California.*

1.1.3.1 Nonstate-regulated buildings, structures and applications. *Except as modified by local ordinance pursuant to Section 1.1.8, the following standards in the California Code of Regulations, Title 24, Parts 2, 2.5, 3, 4, 5, 6, 7, 9, 10 and 11 shall apply to all occupancies and applications not regulated by a state agency.*

1.1.3.2 State-regulated buildings, structures and applications. *The model code, state amendments to the model code and/or state amendments where there are no relevant model code provisions shall apply to the following buildings, structures and applications regulated by state agencies as specified in Sections 1.2 through 1.14, except where modified by local ordinance pursuant to Section 1.1.8. When adopted by a state agency, the provisions of this code shall be enforced by the appropriate enforcing agency, but only to the extent of authority granted to such agency by the state legislature.*

Note: *See "How to Distinguish Between Model Code Language and California Amendments" in the front of the code.*

1. *State-owned buildings, including buildings constructed by the Trustees of the California State University, and to the extent permitted by California laws, buildings designed and constructed by the Regents of the University of California, and regulated by the Building Standards Commission. See Section 1.2 for additional scope provisions.*
2. *Local detention facilities regulated by the Board of State and Community Corrections. See Section 1.3 for additional scope provisions.*
3. *Barbering, cosmetology or electrolysis establishments, acupuncture offices, pharmacies, veterinary facilities and structural pest control locations regulated by the Department of Consumer Affairs. See Section 1.4 for additional scope provisions.*
4. *Section 1.5 reserved for the California Energy Commission.*
5. *Dairies and places of meat inspection regulated by the Department of Food and Agriculture. See Section 1.6 for additional scope provisions.*
6. *Organized camps, laboratory animal quarters, public swimming pools, radiation protection, commissaries serving mobile food preparation vehicles and wild animal quarantine facilities regulated by the Department of Public Health. See Section 1.7 for additional scope provisions.*
7. *Hotels, motels, lodging houses, apartments, dwellings, dormitories, condominiums, shelters for homeless persons, congregate residences, employee housing, factory-built housing and other types of dwellings containing sleeping accommodations with or without common toilets or cooking facilities. See Section 1.8.2.1.1 for additional scope provisions.*
8. *Accommodations for persons with disabilities in buildings containing newly constructed covered multifamily dwellings, new common use areas serving existing covered multifamily dwellings, additions to existing buildings where the addition alone meets the definition of covered multifamily dwellings, and new common-use areas serving new covered multifamily dwellings, which are regulated by the Department of Housing and Community Development. See Section 1.8.2.1.2 for additional scope provisions.*
9. *Permanent buildings and permanent accessory buildings or structures constructed within mobilehome parks and special occupancy parks regulated by the Department of Housing and Community Development. See Section 1.8.2.1.3 for additional scope provisions.*

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10. *Accommodations for persons with disabilities regulated by the Division of the State Architect. See Section 1.9.1 for additional scope provisions.*
11. *Public elementary and secondary schools, community college buildings and state-owned or state-leased essential service buildings regulated by the Division of the State Architect. See Section 1.9.2 for additional scope provisions.*
12. *Qualified historical buildings and structures and their associated sites regulated by the State Historical Building Safety Board with the Division of the State Architect. See California Historical Building Code (Part 8, Title 24, C.C.R) for additional scope provisions.*
13. *General acute care hospitals, acute psychiatric hospitals, skilled nursing and/or intermediate care facilities, clinics licensed by the Department of Public Health and correctional treatment centers regulated by the Department of Health Care Access and Information/Office of Statewide Hospital Planning and Development. See Section 1.10 for additional scope provisions.*
14. *Applications regulated by the Office of the State Fire Marshal include, but are not limited to, the following in accordance with Section 1.11:*
    - *14.1. Buildings or structures used or intended for use as an:*
        1. *Asylum, jail, prison*
        2. *Mental hospital, hospital, home for the elderly, children's nursery, children's home or institution, school or any similar occupancy of any capacity*
        3. *Theater, dancehall, skating rink, auditorium, assembly hall, meeting hall, nightclub, fair building or similar place of assemblage where 50 or more persons may gather together in a building, room or structure for the purpose of amusement, entertainment, instruction, deliberation, worship, drinking or dining, awaiting transportation, or education*
        4. *Small family day-care homes, large family day-care homes, residential facilities and residential facilities for the elderly, residential care facilities*
        5. *State institutions or other state-owned or state-occupied buildings*
        6. *High rise structures*
        7. *Motion picture production studios*
        8. *Organized camps*
        9. *Residential structures*
    - *14.2. Tents, awnings or other fabric enclosures used in connection with any occupancy*
    - *14.3. Fire alarm devices, equipment and systems in connection with any occupancy*
    - *14.4. Hazardous materials, flammable and combustible liquids*
    - *14.5. Public school automatic fire detection, alarm and sprinkler systems*
    - *14.6. Wildland-urban interface fire areas*
15. *Public libraries constructed and renovated using funds from the California Library Construction and Renovation Bond Act of 1988 and regulated by the State Librarian. See Section 1.12 for additional scope provisions.*
16. *Section 1.13 reserved for the Department of Water Resources.*
17. *For applications listed in Section 1.9.1 regulated by the Division of the State Architect—Access Compliance, outdoor environments and uses shall be classified according to accessibility uses described in Chapter 11B.*
18. *Marine Oil Terminals regulated by the California State Lands Commission. See Section 1.14 for additional scope provisions.*

1.1.4 Appendices. *Provisions contained in the appendices of this code shall not apply unless specifically adopted by a state agency or adopted by a local enforcing agency in compliance with Health and Safety Code Section 18901 et. seq. for Building Standards Law, Health and Safety Code Section 17950 for State Housing Law and Health and Safety Code Section 13869.7 for Fire Protection Districts. See Section 1.1.8 of this code.*

1.1.5 Referenced codes. *The codes, standards and publications adopted and set forth in this code, including other codes, standards and publications referred to therein are, by title and date of publication, hereby adopted as standard reference documents of this code. When this code does not specifically cover any subject related to building design and construction, recognized architectural or engineering practices shall be employed. The National Fire Codes, standards and the Fire Protection Handbook of the National Fire Protection Association are permitted to be used as authoritative guides in determining recognized fire prevention engineering practices.*

1.1.6 Nonbuilding standards, orders and regulations. *Requirements contained in the California Building Code, or in any other referenced standard, code or document, which are not building standards as defined in Health and Safety Code Section 18909, shall not be construed as part of the provisions of this code. For nonbuilding standards, orders and regulations, see other titles of the California Code of Regulations.*

1.1.7 Order of precedence and use.

1.1.7.1 Differences. *In the event of any differences between these building standards and the standard reference documents, the text of these building standards shall govern.*

1.1.7.2 Specific provisions. *Where a specific provision varies from a general provision, the specific provision shall apply.*

1.1.7.3 Conflicts. *When the requirements of this code conflict with the requirements of any other part of the California Building Standards Code, Title 24, the most restrictive requirements shall prevail.*

1.1.7.3.1 Detached one- and two-family dwellings. *Detached one- and two-family dwellings, lodging houses, live/work units, townhouses not more than three stories above grade plane in height with a separate means of egress, and their accessory structures, may be designed and constructed in accordance with this code or the California Residential Code, but not both, unless the proposed structure(s) or element(s) exceed the design limitations established in the California Residential Code, and the code user is specifically directed by the California Residential Code to use this code.*

1.1.8 City, county, or city and county amendments, additions or deletions. *The provisions of this code do not limit the authority of city, county, or city and county governments to establish more restrictive and reasonably necessary differences to the provisions contained in this code pursuant to complying with Section 1.1.8.1. The effective date of amendments, additions or deletions to this code by a city, county, or city and county filed pursuant to Section 1.1.8.1 shall be the date filed. However, in no case shall the amendments, additions or deletions to this code be effective any sooner than the effective date of this code.*

Local modifications shall comply with Health and Safety Code Section 18941.5 for Building Standards Law, Health and Safety Code Section 17958 for State Housing Law or Health and Safety Code Section 13869.7 for Fire Protection Districts.

1.1.8.1 Findings and filings.

1. *The city, county, or city and county shall make express findings for each amendment, addition or deletion based upon climatic, topographical or geological conditions.*

   Exception: *Hazardous building ordinances and programs mitigating unreinforced masonry buildings.*
2. *The city, county, or city and county shall file the amendments, additions or deletions expressly marked and identified as to the applicable findings. Cities, counties, cities and counties, and fire departments shall file the amendments, additions or deletions, and the findings with the California Building Standards Commission at 2525 Natomas Park Drive, Suite 130, Sacramento, CA 95833.*
3. *Findings prepared by fire protection districts shall be ratified by the local city, county or city and county and filed with the California Department of Housing and Community Development, Division of Codes and Standards, P.O. Box 278180, Sacramento, CA 95827-8180 or 9342 Tech Center Drive, Suite 500, Sacramento, CA 95826-2582.*

1.1.8.2 Locally adopted energy standards—California Energy Code, Part 6.

In addition to the provisions of Section 1.1.8.1 of this part, the provisions of this section shall apply to a city, county, and cities and counties adopting local energy standards applicable to buildings and structures subject to the California Energy Code, Part 6.

Applicable provisions of Public Resources Code Section 25402.1(h)(2) and applicable provisions of Section 10-106, Chapter 10 of the California Administrative Code, Part 1 apply to locally adopted energy standards amending the California Energy Code, Part 6.

1.1.9 Effective date of this code. *Only those standards approved by the California Building Standards Commission that are effective at the time an application for building permit is submitted shall apply to the plans and specifications for, and to the construction performed under, that permit. For the effective dates of the provisions contained in this code, see the History Note page of this code.*

Exceptions:

(1) ***[HCD 1 & HCD 2]*** *Retroactive permits issued in accordance with Health and Safety Code Section 17958.12.*

(2) ***[HCD 1 & HCD 2]*** *Plans approved by the Department of Housing and Community Development or a Department-approved design approval agency for factory-built housing as defined by Health and Safety Code Section 19971. Approved plans, pursuant to the California Code of Regulations, Title 25, Division 1, Chapter 3, Subchapter 1, Article 3, Section 3037 remain valid for a period of 36 months from the date of plan approval.*

1.1.10 Availability of codes. *At least one complete copy each of Titles 8, 19, 20, 24 and 25 with all revisions shall be maintained in the office of the building official responsible for the administration and enforcement of this code. Each state department concerned and each city, county, or city and county shall have an up-to-date copy of the code available for public inspection. See Health and Safety Code Section 18942(e)(1) and (2).*

1.1.11 Format. *This part fundamentally adopts the International Building Code by reference on a chapter-by-chapter basis. When a specific chapter of the International Building Code is not printed in the code and is marked "Reserved", such chapter of the International Building Code is not adopted as a portion of this code. When a specific chapter of the International Building Code is marked "Not adopted by the State of California" but appears in the code, it may be available for adoption by local ordinance.*

Note: *Matrix Adoption Tables at the front of each chapter may aid the code user in determining which chapter or sections within a chapter are applicable to buildings under the authority of a specific state agency, but they are not to be considered regulatory.*

1.1.12 Validity. *If any chapter, section, subsection, sentence, clause or phrase of this code is for any reason held to be unconstitutional, contrary to statute, exceeding the authority of the state as stipulated by statutes or otherwise inoperative, such decision shall not affect the validity of the remaining portion of this code.*

SECTION 1.2—BUILDING STANDARDS COMMISSION

1.2.1 BSC. *Specific scope of application of the agency responsible for enforcement, the enforcement agency and the specific authority to adopt and enforce such provisions of this code, unless otherwise stated.*

1. State buildings for all occupancies.

Application—*State buildings (all occupancies), including buildings constructed by the Trustees of the California State University (CSU) and the Regents of the University of California (UC) where no state agency has the authority to adopt building standards applicable to such buildings.*

Enforcing agency—*State or local agency specified by the applicable provisions of law.*

Authority cited—*Health and Safety Code Section 18934.5.*

Reference—*Health and Safety Code, Division 13, Part 2.5, commencing with Section 18901.*

2. University of California, California State Universities and California Community Colleges.

Application—*Standards for lighting for parking lots and primary campus walkways at the University of California, California State Universities and California Community Colleges.*

Enforcing agency—*State or local agency specified by the applicable provisions of law.*

Authority cited—*Government Code Section 14617.*

Reference—*Government Code Section 14617.*

3. Existing state-owned buildings, including those owned by the University of California and by the California State University.

Application—*Building seismic retrofit standards including abating falling hazards of structural and nonstructural components and strengthening of building structures. See also Division of the State Architect.*

Enforcing agency—*State or local agency specified by the applicable provisions of law.*

Authority cited—*Health and Safety Code Section 16600.*

Reference—*Health and Safety Code Sections 16600 through 16604.*

4. Unreinforced masonry-bearing wall buildings.

Application—*Minimum seismic strengthening standards for buildings specified in Appendix Chapter A1 of the California Existing Building Code, except for buildings subject to building standards adopted pursuant to Health and Safety Code (commencing) with Section 17910.*

Enforcing agency—*State or local agency specified by the applicable provisions of law.*

Authority cited—*Health and Safety Code Section 18934.7.*

Reference—*Health and Safety Code, Division 13, Part 2.5, commencing with Section 18901.*

1.2.1.1 State building. *For purposes of this code, a "state building" is a structure for which a state agency or state entity has authority to construct, alter, enlarge, replace, repair or demolish.*

1.2.1.2 Enforcement. *[CSU, UC, Judicial Council and California Department of Corrections and Rehabilitation] State agencies or state entities authorized to construct state buildings may appoint a building official who is responsible to the agency for enforcement of the provisions of the California Building Standards Code.*

Exception: *State buildings regulated by other sections of this code remain the enforcement responsibility of the designated entities.*

1.2.1.3 Enforcement. Reserved for DGS.

1.2.1.4 Adopting agency identification. *The provisions of this code applicable to buildings identified in this section will be identified in the Matrix Adoption Tables under the acronym* ***BSC****.*

1.2.2 BSC-CG. *Specific scope of application of the agency responsible for enforcement, the enforcement agency and the specific authority to adopt and enforce such provisions of this code, unless otherwise stated.*

1. Green buildings standards for nonresidential occupancies.

Application—*All occupancies where no state agency has the authority to adopt green building standards applicable to those occupancies.*

Enforcing agency—*State or local agency specified by the applicable provisions of law.*

Authority cited—*Health and Safety Code Sections 18930.5(a), 18938 and 18940.5.*

Reference—*Health and Safety Code, Division 13, Part 2.5, commencing with Section 18901.*

2. Graywater systems for nonresidential occupancies.

Application—*The construction, installation and alteration of graywater systems for indoor and outdoor uses in nonresidential occupancies.*

Enforcing agency—*State or local agency specified by the applicable provisions of law.*

Authority cited—*Health and Safety Code Section 18941.8.*

Reference—*Health and Safety Code Section 18941.8.*

1.2.2.1 Adopting agency identification. *The provisions of this code applicable to buildings identified in this section will be identified in the Matrix Adoption Tables under the acronym* ***BSC-CG****.*

1.2.3 Alternative materials, design and methods of construction and equipment. *The provisions of this code are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed by this code,*

provided that any such alternative has been approved. An alternative material, design or method of construction shall be approved where the building official finds that the proposed design is satisfactory and complies with the intent of the provisions of this code, and that the material, method or work offered is, for the purpose intended, at least the equivalent of that prescribed in this code in quality, strength, effectiveness, fire resistance, durability and safety.

1.2.3.1 Research reports. *Supporting data, where necessary to assist in the approval of materials or assemblies not specifically provided for in this code, shall consist of valid research reports from approved sources.*

1.2.3.2 Tests. *Whenever there is insufficient evidence of compliance with the provisions of this code, or evidence that a material or method does not conform to the requirements of this code, or in order to substantiate claims for alternative materials or methods, the building official shall have the authority to require tests as evidence of compliance to be made at no expense to the jurisdiction. Test methods shall be as specified in this code or by other recognized test standards. In the absence of recognized and accepted test methods, the building official shall approve the testing procedures. Tests shall be performed by an approved agency. Reports of such tests shall be retained by the building official for the period required for retention of public records.*

SECTION 1.3—BOARD OF STATE AND COMMUNITY CORRECTIONS

1.3.1 *Specific scope of application of the agency responsible for enforcement, the enforcement agency and the specific authority to adopt and enforce such provisions of this code, unless otherwise stated.*

Application—*Local detention facilities.*

Enforcing agency—*Board of State and Community Corrections.*

Authority cited—*Penal Code Section 6030; Welfare and Institutions Code Sections 207.1, 210 and 885.*

Reference—*Penal Code Section 6030; Welfare and Institutions Code Sections 207.1, 210 and 885.*

1.3.2 Adopting agency identification. *The provisions of this code applicable to buildings identified in this section will be identified in the Matrix Adoption Tables under the acronym BSCC.*

SECTION 1.4—DEPARTMENT OF CONSUMER AFFAIRS

1.4.1 *Specific scope of application of the agency responsible for enforcement, the enforcement agency and the specific authority to adopt and enforce such provisions of this code, unless otherwise stated.*

1. ***Board of Barbering and Cosmetology.***

   Application—*Any establishment or mobile unit where barbering, cosmetology or electrolysis is being performed.*

   Enforcing agency—*State or local agency specified by the applicable provisions of law.*

   Authority cited—*Business and Professions Code Section 7312.*

   Reference—*Business and Professions Code Sections 7303, 7303.1, 7312 and 7313.*

2. ***Acupuncture Board.***

   Application—*Acupuncture offices.*

   Enforcing agency—*State or local agency specified by the applicable provisions of law.*

   Authority cited—*Business and Professions Code Section 4933.*

   Reference—*Business and Professions Code Sections 4928, 4928.1 and 4933.*

3. ***Board of Pharmacy.***

   Application—*Pharmacies.*

   Enforcing agency—*State or local agency specified by the applicable provisions of law.*

   Authority cited—*Business and Professions Code Section 4005.*

   Reference—*Business and Professions Code Sections 4005, 4127.7 and 4201.*

4. ***Veterinary Medical Board.***

   Application—*Veterinary facilities.*

   Enforcing agency—*State or local agency specified by the applicable provisions of law.*

   Authority cited—*Business and Professions Code Section 4808.*

   Reference—*Business and Professions Code Sections 4800, 4800.1, 4808 and 4809.5.*

5. ***Structural Pest Control Board.***

   Application—*Structural pest control locations.*

   Enforcing agency—*Structural Pest Control Board.*

   Authority cited—*Business and Professions Code Section 8525.*

   Reference—*Business and Professions Code Sections 8520, 8520.1 and 8525.*

1.4.2 Adopting agency identification. *The provisions of this code applicable to buildings identified in this section will be identified in the Matrix Adoption Tables under the acronym CA.*

SECTION 1.5—RESERVED

SECTION 1.6—DEPARTMENT OF FOOD AND AGRICULTURE

1.6.1 *Specific scope of application of the agency responsible for enforcement, the enforcement agency and the specific authority to adopt and enforce such provisions of this code, unless otherwise stated.*

Application—*Dairies and places of meat and poultry inspection.*

Enforcing agency—*Department of Food and Agriculture.*

Authority cited—*Food and Agricultural Code Sections 18735, 18960, 19384, 33481 and 33731.*

Reference—*Food and Agricultural Code Sections 18735, 18960, 19384, 33481 and 33731.*

1.6.2 Adopting agency identification. *The provisions of this code applicable to buildings identified in this section will be identified in the Matrix Adoption Tables under the acronym AGR.*

SECTION 1.7—CALIFORNIA DEPARTMENT OF PUBLIC HEALTH

1.7.1 *Specific scope of application of the agency responsible for enforcement, the enforcement agency and the specific authority to adopt and enforce such provisions of this code, unless otherwise stated.*

California Department of Public Health

Application—*Organized camps, laboratory animal quarters, public swimming pools, radiation protection and producing facilities, commissaries serving mobile food preparation vehicles, wild animal quarantine facilities, shellfish facilities and food establishments.*

Enforcing agency—*The California Department of Public Health and the local health agencies.*

Authority cited—*Health and Safety Code Sections 1660, 18897.2, 110065, 112165, 113710, 114304, 115061, 116050, 121795 and 131200.*

Reference—*Health and Safety Code Sections 1650, 1660, 18897.2, 18897.4, 18897.7, 100150, 110065, 113705, 113710, 114825, 114965, 115061, 116050, 116503, 112165, 121795 and 131200.*

1.7.2 Adopting agency identification. *The provisions of this code applicable to buildings identified in this section will be identified in the Matrix Adoption Tables under the acronym DPH.*

SECTION 1.8—DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT

1.8.1 Purpose. *The purpose of this code is to establish the minimum requirements necessary to protect the health, safety and general welfare of the occupants and the public by governing accessibility, erection, construction, reconstruction, enlargement, conversion, alteration, repair, moving, removal, demolition, occupancy, use, height, court, area, sanitation, ventilation, maintenance and safety to life and property from fire and other hazards attributed to the built environment.*

SECTION 1.8.2—AUTHORITY AND ABBREVIATIONS

1.8.2.1 General. *The Department of Housing and Community Development is authorized by law to promulgate and adopt building standards and regulations for several types of building applications. The applications under the authority of the Department of Housing and Community Development are listed in Sections 1.8.2.1.1 through 1.8.2.1.3.*

Note: *See the California Residential Code for detached one- and two-family dwellings and townhouses.*

1.8.2.1.1 Housing construction.

Application—*Hotels, motels, lodging houses, apartments, dwellings, dormitories, condominiums, shelters for homeless persons, congregate residences, employee housing, factory-built housing and other types of dwellings containing sleeping accommodations with or without common toilet or cooking facilities including accessory buildings, facilities and uses thereto. Sections of this code which pertain to applications listed in this section are identified using the abbreviation "HCD 1."*

Enforcing agency—*Local building department or the Department of Housing and Community Development.*

Authority cited—*Health and Safety Code Sections 17040, 17920.9, 17921, 17921.5, 17921.6, 17921.10, 17922, 17922.6, 17922.12, 17922.14, 17922.15, 17926, 17927, 17928, 17958.12, 18938.3, 18944.11 and 19990; and Government Code Section 12955.1.*

Reference—*Business and Professions Code Division 5; Health and Safety Code Sections 17000 through 17062.5, 17910 through 17995.5, 18200 through 18700, 18860 through 18874, 18938.6, 18941, 19890, 19891, 19892 and 19960 through 19997; Civil Code Sections 832, 1101.4, 1101.5, 1954.201, 1954.202 and 5551; and Government Code Sections 8698.4, 12955.1 and 12955.1.1. California Code of Regulations, Title 20, Sections 1605.1, 1605.3 and 1607.*

1.8.2.1.2 Housing accessibility.

Application—*Covered multifamily dwellings as defined in Chapter 2 including, but not limited to, lodging houses, dormitories, timeshares, condominiums, shelters for homeless persons, congregate residences, apartments, dwellings, employee housing, factory-built housing and other types of dwellings containing sleeping accommodations with or without common toilet or cooking facilities.*

Sections of this code identified by the abbreviation "HCD 1-AC" require specific accommodations for persons with disabilities as defined in Chapter 2. The application of such provisions shall be in conjunction with other requirements of this code and apply only to newly constructed covered multifamily dwellings as defined in Chapter 2. "HCD 1-AC" applications include, but are not limited to, the following:

1. *All newly constructed covered multifamily dwellings as defined in Chapter 2.*
2. *New common use areas as defined in Chapter 2, serving existing covered multifamily dwellings.*
3. *Additions to existing buildings, where the addition alone meets the definition of covered multifamily dwellings as defined in Chapter 2.*
4. *New common use areas serving new covered multifamily dwellings.*
5. *Where any portion of a building's exterior is preserved, but the interior of the building is removed, including all structural portions of floors and ceilings, the building is considered a new building for determining the application of Chapter 11A.*

"HCD 1-AC" building standards generally do not apply to public use areas or public accommodations such as hotels and motels, and public housing. Public use areas, public accommodations and public housing, as defined in Chapter 2, are subject to the Division of the State Architect (DSA-AC) in Chapter 11B, and are referenced in Section 1.9.1.

Newly constructed covered multifamily dwellings, which can also be defined as public housing, shall be subject to the requirements of Chapter 11A and Chapter 11B.

Enforcing agency—*Local building department or the Department of Housing and Community Development.*

Authority cited—*Health and Safety Code Sections 17040, 17920.9, 17921, 17921.5, 17921.6, 17921.10, 17922, 17922.6, 17922.12, 17922.14, 17926, 17927, 17928, 17958.12, 18938.3, 18944.11 and 19990; and Government Code Sections 12955.1 and 12955.1.1.*

Reference—*Health and Safety Code Sections 17000 through 17062.5, 17910 through 17995.5, 18200 through 18700, 18860 through 18874, 18938.6, 18941, 19890, 19891, 19892 and 19960 through 19997; Civil Code Sections 1101.4, 1101.5, 1954.201 and 1954.202; and Government Code Sections 12955.1 and 12955.1.1. California Code of Regulations, Title 20, Sections 1605.1, 1605.3 and 1607.*

1.8.2.1.3 Permanent buildings in mobilehome parks and special occupancy parks.

Application—*Permanent buildings, and permanent accessory buildings or structures, constructed within mobilehome parks and special occupancy parks that are under the control and ownership of the park operator. Sections of this code which pertain to applications listed in this section are identified using the abbreviation "HCD 2."*

Enforcing agency—*The Department of Housing and Community Development, local building department or other local agency that has assumed responsibility for the enforcement of Health and Safety Code, Division 13, Part 2.1 commencing with Section 18200 for mobilehome parks and Health and Safety Code, Division 13, Part 2.3 commencing with Section 18860 for special occupancy parks.*

Authority cited—*Health and Safety Code Sections 17040, 17920.9, 17921, 17921.5, 17921.6, 17921.10, 17922, 17922.6, 17922.12, 17922.14, 17922.15, 17926, 17927, 17928, 17958.12, 18552, 18554, 18620, 18630, 18640, 18670, 18690, 18691, 18865, 18871.3, 18871.4, 18873, 18873.1 through 18873.5, 18938.3, 18944.11 and 19990; and Government Code Section 12955.1.*

Reference—*Health and Safety Code Sections 17000 through 17062.5, 17910 through 17995.5, 18200 through 18700, 18860 through 18874, 18938.6, 18941, 19890, 19891, 19892 and 19960 through 19997; Civil Code Sections 1101.4, 1101.5 and 1954.201; and Government Code Sections 12955.1 and 12955.1.1. California Code of Regulations, Title 20, Sections 1605.1, 1605.3 and 1607; and Title 25, Sections 1042 and 2042.*

SECTION 1.8.3—LOCAL ENFORCING AGENCY

1.8.3.1 Duties and powers. *The building department of every city, county, or city and county, shall enforce all the provisions of law, this code and the other rules and regulations promulgated by the Department of Housing and Community Development pertaining to the installation, erection, construction, reconstruction, movement, enlargement, conversion, alteration, repair, removal, demolition or arrangement of apartments, condominiums, hotels, motels, lodging houses and dwellings, including accessory buildings, facilities and uses thereto.*

The provisions regulating the erection and construction of dwellings and appurtenant structures shall not apply to existing structures as to which construction is commenced or approved prior to the effective date of these regulations. Requirements relating to use, maintenance and occupancy shall apply to all dwellings and appurtenant structures approved for construction or constructed before or after the effective date of this code.

For additional information regarding the use and occupancy of existing buildings and appurtenant structures, see California Code of Regulations, Title 25, Division 1, Chapter 1, Subchapter 1, commencing with Article 1, Section 1.

For additional requirements regarding additions, alterations or repairs to existing buildings and appurtenant structures, see the California Existing Building Code.

1.8.3.2 Laws, rules and regulations. *Other than the building standards contained in this code, and notwithstanding other provisions of law, the statutory authority and location of the laws, rules and regulations to be enforced by local enforcing agencies are listed by statute in Sections 1.8.3.2.1 through 1.8.3.2.5 below:*

1.8.3.2.1 State Housing Law. *Refer to the State Housing Law, California Health and Safety Code, Division 13, Part 1.5, commencing with Section 17910 and California Code of Regulations, Title 25, Division 1, Chapter 1, Subchapter 1, commencing with Section 1, for the erection, construction, reconstruction, movement, enlargement, conversion, alteration, repair, removal, demolition or arrangement of apartments, condominiums, hotels, motels, lodging houses and dwellings, including accessory buildings, facilities and uses thereto.*

1.8.3.2.2 Mobilehome Parks Act. *Refer to the Mobilehome Parks Act, California Health and Safety Code, Division 13, Part 2.1, commencing with Section 18200 and California Code of Regulations, Title 25, Division 1, Chapter 2, commencing with Section 1000 for mobilehome park administrative and enforcement authority, permits, plans, fees, violations, inspections and penalties both within and outside mobilehome parks.*

Exception: *Mobilehome parks where the Department of Housing and Community Development is the enforcing agency.*

1.8.3.2.3 Special Occupancy Parks Act. *Refer to the Special Occupancy Parks Act, California Health and Safety Code, Division 13, Part 2.3, commencing with Section 18860 and California Code of Regulations, Title 25, Division 1, Chapter 2.2, commencing with Section 2000 for special occupancy park administrative and enforcement authority, permits, fees, violations, inspections and penalties both within and outside of special occupancy parks.*

Exception: *Special occupancy parks where the Department of Housing and Community Development is the enforcing agency.*

1.8.3.2.4 Employee Housing Act. *Refer to the Employee Housing Act, California Health and Safety Code, Division 13, Part 1, commencing with Section 17000 and California Code of Regulations, Title 25, Division 1, Chapter 1, Subchapter 3, commencing with Section 600 for employee housing administrative and enforcement authority, permits, fees, violations, inspections and penalties.*

1.8.3.2.5 Factory-Built Housing Law. *Refer to the Factory-Built Housing Law, California Health and Safety Code, Division 13, Part 6 commencing with Section 19960 and California Code of Regulations, Title 25, Division 1, Chapter 3, Subchapter 1, commencing with Section 3000 for factory-built housing administrative and enforcement authority, permits, fees, violations, inspections and penalties.*

SECTION 1.8.4—PERMITS, FEES, APPLICATIONS AND INSPECTIONS

1.8.4.1 Permits. *A written construction permit shall be obtained from the enforcing agency prior to the erection, construction, reconstruction, installation, moving or alteration of any building or structure.*

Exceptions:

1. *Work exempt from permits as specified in Chapter 1, Division II, Scope and Administration, Section 105.2.*
2. *Changes, alterations or repairs of a minor nature not affecting structural features, egress, sanitation, safety or accessibility as determined by the enforcing agency.*
3. *Retroactive permits issued in accordance with Health and Safety Code Section 17958.12.*

Exemptions from permit requirements shall not be deemed to grant authorization for any work to be done in any manner in violation of other provisions of law or this code.

1.8.4.2 Fees. *Subject to other provisions of law, the governing body of any city, county, or city and county, may prescribe fees to defray the cost of enforcement of rules and regulations promulgated by the Department of Housing and Community Development. The amount of the fees shall not exceed the amount reasonably necessary to administer or process permits, certificates, forms or other documents, or to defray the costs of enforcement. For additional information, see the State Housing Law, Health and Safety Code, Division 13, Part 1.5, Section 17951 and California Code of Regulations, Title 25, Division 1, Chapter 1, Subchapter 1, Article 3, commencing with Section 6.*

1.8.4.3 Plan review and time limitations. *Subject to other provisions of law, provisions related to plan checking, prohibition of excessive delays and contracting with or employment of private parties to perform plan checking are set forth in the State Housing Law, Health and Safety Code Section 17960.1, and for employee housing, in Health and Safety Code Section 17021.*

1.8.4.3.1 Retention of plans. *The building department of every city, county, or city and county shall maintain an official copy, microfilm, electronic or other type of photographic copy of the plans of every building, during the life of the building, for which the department issued a building permit.*

Exceptions:

1. *Single or multiple dwellings not more than two stories and basement in height.*
2. *Garages and other structures appurtenant to buildings listed in Exception 1.*
3. *Farm or ranch buildings appurtenant to buildings listed in Exception 1.*
4. *Any one-story building where the span between bearing walls does not exceed 25 feet (7620 mm), except a steel frame or concrete building.*

All plans for common interest developments as defined in Section 4100 of the California Civil Code shall be retained. For additional information regarding plan retention and reproduction of plans by an enforcing agency, see Health and Safety Code Sections 19850 through 19852.

1.8.4.4 Inspections. *Construction or work for which a permit is required shall be subject to inspection by the building official and such construction or work shall remain accessible and exposed for inspection purposes until approved. Approval as a result of an inspection shall not be construed to be an approval of a violation of the provisions of this code or other regulations of the Department of Housing and Community Development. Required inspections are listed in Chapter 1, Division II, Scope and Administration, Sections 110.3.1, 110.3.2, 110.3.3, 110.3.4, 110.3.4.1, 110.3.5, 110.3.6, 110.3.7, 110.3.9, 110.3.10, 110.3.11, 110.3.12, 110.3.12.1 and 110.3.12.2.*

SECTION 1.8.5—RIGHT OF ENTRY FOR ENFORCEMENT

1.8.5.1 General. *Subject to other provisions of law, officers and agents of the enforcing agency may enter and inspect public and private properties to secure compliance with the rules and regulations promulgated by the Department of Housing and Community Development. For limitations and additional information regarding enforcement, see the following:*

1. *For applications subject to the State Housing Law as referenced in Section 1.8.3.2.1 of this code, refer to Health and Safety Code, Division 13, Part 1.5, commencing with Section 17910 and California Code of Regulations, Title 25, Division 1, Chapter 1, Subchapter 1, commencing with Section 1.*
2. *For applications subject to the Mobilehome Parks Act as referenced in Section 1.8.3.2.2 of this code, refer to Health and Safety Code, Division 13, Part 2.1, commencing with Section 18200 and California Code of Regulations, Title 25, Division 1, Chapter 2, commencing with Section 1000.*
3. *For applications subject to the Special Occupancy Parks Act as referenced in Section 1.8.3.2.3 of this code, refer to Health and Safety Code, Division 13, Part 2.3, commencing with Section 18860 and California Code of Regulations, Title 25, Division 1, Chapter 2.2, commencing with Section 2000.*
4. *For applications subject to the Employee Housing Act as referenced in Section 1.8.3.2.4 of this code, refer to Health and Safety Code, Division 13, Part 1, commencing with Section 17000 and California Code of Regulations, Title 25, Division 1, Chapter 1, Subchapter 3, commencing with Section 600.*
5. *For applications subject to the Factory-Built Housing Law as referenced in Section 1.8.3.2.5 of this code, refer to Health and Safety Code, Division 13, Part 6, commencing with Section 19960 and California Code of Regulations, Title 25, Division 1, Chapter 3, Subchapter 1, commencing with Section 3000.*

SECTION 1.8.6—LOCAL MODIFICATION BY ORDINANCE OR REGULATION

1.8.6.1 General. *Subject to other provisions of law, a city, county, or city and county may make changes to the provisions adopted by the Department of Housing and Community Development. If any city, county, or city and county does not amend, add or repeal by local ordinances or regulations the provisions published in this code or other regulations promulgated by the Department of Housing and Community Development, those provisions shall be applicable and shall become effective 180 days after publication by the California Building Standards Commission. Amendments, additions and deletions to this code adopted by a city, county, or city and county pursuant to California Health and Safety Code Sections 17958.5, 17958.7 and 18941.5, together with all applicable portions of this code, shall also become effective 180 days after publication of the California Building Standards Code by the California Building Standards Commission.*

1.8.6.2 Findings, filings and rejections of local modifications. *Prior to making any modifications or establishing more restrictive building standards, the governing body shall make express findings and filings, as required by California Health and Safety Code Section 17958.7, showing that such modifications are reasonably necessary due to local climatic, geological or topographical conditions. No modification shall become effective or operative unless the following requirements are met:*

1. *The express findings shall be made available as a public record.*
2. *A copy of the modification and express finding, each document marked to cross-reference the other, shall be filed with the California Building Standards Commission for a city, county, or city and county and with the Department of Housing and Community Development for fire protection districts.*
3. *The California Building Standards Commission has not rejected the modification or change.*

Nothing in this section shall limit the authority of fire protection districts pursuant to California Health and Safety Code Section 13869.7(a).

SECTION 1.8.7—ALTERNATE MATERIALS, DESIGNS, TESTS AND METHODS OF CONSTRUCTION

1.8.7.1 General. *The provisions of this code, as adopted by the Department of Housing and Community Development, are not intended to prevent the use of any alternate material, appliance, installation, device, arrangement, design or method of construction not specifically prescribed by this code. Consideration and approval of alternates shall comply with Section 1.8.7.2 for local building departments and Section 1.8.7.3 for the Department of Housing and Community Development.*

1.8.7.2 Local building departments. *The building department of any city, county, or city and county may approve alternates for use in the erection, construction, reconstruction, movement, enlargement, conversion, alteration, repair, removal, demolition or arrangement of apartments, condominiums, hotels, motels, lodging houses, dwellings or accessory structures, except for the following:*

1. *Structures located in mobilehome parks as defined in California Health and Safety Code Section 18214.*
2. *Structures located in special occupancy parks as defined in California Health and Safety Code Section 18862.43.*
3. *Factory-built housing as defined in California Health and Safety Code Section 19971.*

1.8.7.2.1 Approval of alternates. *The consideration and approval of alternates by a local building department shall comply with the following procedures and limitations:*

1. *The approval shall be granted on a case-by-case basis.*
2. *Evidence shall be submitted to substantiate claims that the proposed alternate, in performance, safety and protection of life and health, conforms to, or is at least equivalent to, the standards contained in this code and other rules and regulations promulgated by the Department of Housing and Community Development.*

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3. *The local building department may require tests performed by an approved testing agency at the expense of the owner or owner's agent as proof of compliance.*
4. *If the proposed alternate is related to accessibility in covered multifamily dwellings or in facilities serving covered multifamily dwellings as defined in Chapter 2, the proposed alternate must also meet the threshold set for equivalent facilitation as defined in Chapter 2.*

For additional information regarding approval of alternates by a building department pursuant to the State Housing Law, see California Health and Safety Code Section 17951(e) and California Code of Regulations, Title 25, Division 1, Chapter 1, Subchapter 1.

1.8.7.3 Department of Housing and Community Development. *The Department of Housing and Community Development may approve alternates for use in the erection, construction, reconstruction, movement, enlargement, conversion, alteration, repair, removal or demolition of apartments, condominiums, hotels, motels, lodging houses, dwellings or an accessory thereto and permanent buildings in mobilehome parks and special occupancy parks. The consideration and approval of alternates shall comply with the following:*

1. *The department may require tests at the expense of the owner or owner's agent to substantiate compliance with the California Building Standards Code.*
2. *The approved alternate shall, for its intended purpose, be at least equivalent in performance and safety to the materials, designs, tests or methods of construction prescribed by this code.*

SECTION 1.8.8—APPEALS BOARD

1.8.8.1 General. *Every city, county, or city and county shall establish a process to hear and decide appeals of orders, decisions and determinations made by the enforcing agency relative to the application and interpretation of this code and other regulations governing construction, use, maintenance and change of occupancy. The governing body of any city, county, or city and county may establish a local appeals board and a housing appeals board to serve this purpose. Members of the appeals board(s) shall not be employees of the enforcing agency and shall be knowledgeable in the applicable building codes, regulations and ordinances as determined by the governing body of the city, county, or city and county.*

Where no such appeals boards or agencies have been established, the governing body of the city, county, or city and county shall serve as the local appeals board or housing appeals board as specified in California Health and Safety Code Sections 17920.5 and 17920.6.

1.8.8.2 Definitions. *The following terms shall for the purposes of this section have the meaning shown.*

HOUSING APPEALS BOARD. *The board or agency of a city, county, or city and county which is authorized by the governing body of the city, county, or city and county to hear appeals regarding the requirements of the city, county, or city and county relating to the use, maintenance and change of occupancy of buildings and structures, including requirements governing alteration, additions, repair, demolition and moving. In any area in which there is no such board or agency, "Housing appeals board" means the local appeals board having jurisdiction over the area.*

LOCAL APPEALS BOARD. *The board or agency of a city, county, or city and county which is authorized by the governing body of the city, county, or city and county to hear appeals regarding the building requirements of the city, county, or city and county. In any area in which there is no such board or agency, "Local appeals board" means the governing body of the city, county, or city and county having jurisdiction over the area.*

1.8.8.3 Appeals. *Except as otherwise provided in law, any person, firm or corporation adversely affected by a decision, order or determination by a city, county, or city and county relating to the application of building standards published in the California Building Standards Code, or any other applicable rule or regulation adopted by the Department of Housing and Community Development, or any lawfully enacted ordinance by a city, county, or city and county, may appeal the issue for resolution to the local appeals board or housing appeals board as appropriate.*

The local appeals board shall hear appeals relating to new building construction and the housing appeals board shall hear appeals relating to existing buildings.

SECTION 1.8.9—UNSAFE BUILDINGS OR STRUCTURES

1.8.9.1 Authority to enforce. *Subject to other provisions of law, the administration, enforcement, actions, proceedings, abatement, violations and penalties for unsafe buildings and structures are contained in the following statutes and regulations:*

1. *For applications subject to the State Housing Law as referenced in Section 1.8.3.2.1 of this code, refer to Health and Safety Code, Division 13, Part 1.5, commencing with Section 17910 and California Code of Regulations, Title 25, Division 1, Chapter 1, Subchapter 1, commencing with Section 1. For enforcement related to accessory dwelling units, see Section 17980.12 operative until January 1, 2035.*
2. *For applications subject to the Mobilehome Parks Act as referenced in Section 1.8.3.2.2 of this code, refer to Health and Safety Code, Division 13, Part 2.1, commencing with Section 18200 and California Code of Regulations, Title 25, Division 1, Chapter 2, commencing with Section 1000.*
3. *For applications subject to the Special Occupancy Parks Act as referenced in Section 1.8.3.2.3 of this code, refer to Health and Safety Code, Division 13, Part 2.3, commencing with Section 18860 and California Code of Regulations, Title 25, Division 1, Chapter 2.2, commencing with Section 2000.*

4. *For applications subject to the Employee Housing Act as referenced in Section 1.8.3.2.4 of this code, refer to Health and Safety Code, Division 13, Part 1, commencing with Section 17000 and California Code of Regulations, Title 25, Division 1, Chapter 1, Subchapter 3, commencing with Section 600.*
5. *For applications subject to the Factory-Built Housing Law as referenced in Section 1.8.3.2.5 of this code, refer to Health and Safety Code, Division 13, Part 6, commencing with Section 19960 and California Code of Regulations, Title 25, Division 1, Chapter 3, Subchapter 1, commencing with Section 3000.*

1.8.9.2 Actions and proceedings. *Subject to other provisions of law, punishments, penalties and fines for violations of building standards are contained in the following statutes and regulations:*

1. *For applications subject to the State Housing Law as referenced in Section 1.8.3.2.1 of this code, refer to Health and Safety Code, Division 13, Part 1.5, commencing with Section 17910 and California Code of Regulations, Title 25, Division 1, Chapter 1, Subchapter 1, commencing with Section 1.*
2. *For applications subject to the Mobilehome Parks Act as referenced in Section 1.8.3.2.2 of this code, refer to Health and Safety Code, Division 13, Part 2.1, commencing with Section 18200 and California Code of Regulations, Title 25, Division 1, Chapter 2, commencing with Section 1000.*
3. *For applications subject to the Special Occupancy Parks Act as referenced in Section 1.8.3.2.3 of this code, refer to Health and Safety Code, Division 13, Part 2.3, commencing with Section 18860 and California Code of Regulations, Title 25, Division 1, Chapter 2.2, commencing with Section 2000.*
4. *For applications subject to the Employee Housing Act as referenced in Section 1.8.3.2.4 of this code, refer to Health and Safety Code, Division 13, Part 1, commencing with Section 17000 and California Code of Regulations, Title 25, Division 1, Chapter 1, Subchapter 3, commencing with Section 600.*
5. *For applications subject to the Factory-Built Housing Law as referenced in Section 1.8.3.2.5 of this code, refer to Health and Safety Code, Division 13, Part 6, commencing with Section 19960 and California Code of Regulations, Title 25, Division 1, Chapter 3, Subchapter 1, commencing with Section 3000.*

SECTION 1.8.10—OTHER BUILDING REGULATIONS

1.8.10.1 Existing structures. *Notwithstanding other provisions of law, the replacement, retention and extension of original materials and the use of original methods of construction for any existing building or accessory structure, or portions thereof, shall be permitted in accordance with the provisions of this code and the California Existing Building Code, as adopted by the Department of Housing and Community Development. For additional information, see California Health and Safety Code, Sections 17912, 17920.3, 17922 and 17958.8.*

1.8.10.2 Moved structures. *Subject to the requirements of California Health and Safety Code Sections 17922, 17922.3 and 17958.9, local ordinances or regulations relating to a moved residential building or accessory structure thereto, shall permit the replacement, retention and extension of original materials and the use of original methods of construction so long as the structure does not become or continue to be a substandard building.*

SECTION 1.9—DIVISION OF THE STATE ARCHITECT

1.9.1 Division of the State Architect—Access Compliance.

General. *The purpose of this code is to ensure that barrier-free design is incorporated in all buildings, facilities, site work and other improvements to which this code applies in compliance with state law to ensure that these improvements are accessible to and usable by persons with disabilities. Additions, alterations and structural repairs in all buildings and facilities shall comply with these provisions for new buildings, except as otherwise provided and specified herein.*

The provisions of these regulations shall apply to any portable buildings leased or owned by a school district, and shall also apply to temporary and emergency buildings and facilities. Temporary buildings and facilities are not of permanent construction but are extensively used or are essential for public use for a period of time. Examples of temporary buildings or facilities covered include, but are not limited to: reviewing stands, temporary classrooms, bleacher areas, exhibit areas, temporary banking facilities, temporary health screening services or temporary safe pedestrian passageways around a construction site.

In addition, to incorporate standards at least as restrictive as those required by the federal government for barrier-free design under (1) Title III (Public Accommodations and Commercial Facilities), Subpart D (New Construction and Alteration) (see 28 C.F.R., Part 36), and (2) Title II (Public Entities), Section 35.151 (New Construction and Alterations) (see 28 C.F.R., Part 35) both from the Americans with Disabilities Act of 1990, 2004 Americans with Disabilities Act Accessibility Guidelines, as adopted by the U.S. Department of Justice (see 36 C.F.R. Part 1191, Appendices B and D), and (3) under the Fair Housing Amendments Act of 1988. Some of these regulations may be more stringent than state law in order to meet the federal requirement.

1.9.1.1 Application. *See Government Code commencing with Section 4450.*

Publicly funded buildings, structures, sidewalks, curbs and related facilities shall be accessible to and usable by persons with disabilities as follows:

1.9.1.1.1 *All buildings, structures, sidewalks, curbs and related facilities constructed in the state by the use of state, county or municipal funds, or the funds of any political subdivision of the state. For public housing see Section 1.9.1.3.*

1.9.1.1.2 *All buildings, structures and facilities that are leased, rented, contracted, sublet or hired by any municipal, county or state division of government, or by a special district. For public housing see Section 1.9.1.3.*

1.9.1.1.3 *All existing publicly funded buildings and facilities when alterations, structural repairs or additions are made to such buildings or facilities. For detailed requirements on existing buildings, see Chapter 11B, Division 2, Section 11B-202. For public housing see Section 1.9.1.3.*

1.9.1.1.4 *With respect to buildings, structures, sidewalks, curbs and related facilities not requiring a building permit, building standards published in the California Building Standards Code relating to access for persons with disabilities and other regulations adopted pursuant to Government Code Section 4450, and in effect at the time construction is commenced, shall be applicable.*

1.9.1.2 Application. *See Health and Safety Code commencing with Section 19952.*

All privately funded public accommodations, as defined, and commercial facilities, as defined, shall be accessible to persons with disabilities as follows:

Exception: *Certain types of privately funded multistory buildings do not require installation of an elevator to provide access above and below the first floor. See Chapter 11B.*

1.9.1.2.1 *Any building, structure, facility, complex or improved area, or portions thereof, which are used by the general public.*

1.9.1.2.2 *Any sanitary facilities which are made available for the public, clients or employees in such accommodations or facilities.*

1.9.1.2.3 *Any curb or sidewalk intended for public use that is constructed in this state with private funds.*

1.9.1.2.4 *All existing privately funded public accommodations when alterations, structural repairs or additions are made to such public accommodations as set forth under Chapter 11B.*

1.9.1.3 Application—Public housing. *See Government Code Section 12955.1(c) and the definition for public housing in Chapter 2.*

1.9.1.4 Enforcing agency.

1.9.1.4.1 *The director of the Department of General Services where state funds are utilized for any project or where funds of counties, municipalities or other political subdivisions are utilized for the construction of elementary, secondary or community college projects.*

1.9.1.4.2 *The governing bodies where funds of counties, municipalities or other political subdivisions are utilized except as otherwise provided above.*

1.9.1.4.3 *The building department of every city, county or city and county within the territorial area of its city, county or city and county, where private funds are utilized. "Building department" means the department, bureau or officer charged with the enforcement of laws or ordinances regulating the erection or construction, or both the erection and construction, of buildings.*

1.9.1.5 *Special conditions for persons with disabilities requiring appeals action ratification. Whenever reference is made in these regulations to this section, the findings and determinations required to be rendered by the local enforcing agency shall be subject to ratification through an appeals process.*

1.9.1.6 Authority cited—*Government Code Section 4450.*

1.9.1.7 Reference cited—*Government Code Sections 4450 through 4461 and 12955.1(c) and Health and Safety Code Sections 18949.1, 19952 through 19959.*

1.9.1.8 Adopting agency identification. *The provisions of this code applicable to buildings identified in this Subsection 1.9.1 will be identified in the Matrix Adoption Tables under the acronym DSA-AC.*

1.9.2 Division of the State Architect—Structural Safety.

1.9.2.1 DSA-SS Division of the State Architect-Structural Safety.

Application—*Public elementary and secondary schools, community colleges and state-owned or state-leased essential services buildings.*

Enforcing agency—*The Division of the State Architect—Structural Safety (DSA-SS) has been delegated the responsibility and authority by the Department of General Services to review and approve the design and observe the construction of public elementary and secondary schools, community colleges and state-owned or state-leased essential services buildings.*

Authority cited—*Education Code Sections 17310 and 81142 and Health and Safety Code Section 16022.*

Reference—*Education Code Sections 17280 through 17317, and 81130 through 81147 and Health and Safety Code Sections 16000 through 16023.*

1.9.2.1.1 Applicable administrative standards.

1. ***Title 24, Part 1, California Code of Regulations:***
    - *1.1. Sections 4-301 through 4-355, Group 1, and Sections 4-401 through 4-435, Group 2, Chapter 4 for public elementary and secondary schools and community colleges.*
    - *1.2. Sections 4-201 through 4-249, Chapter 4, for state-owned or state-leased essential services buildings.*
2. ***Title 24, Part 2, California Code of Regulations:*** *[applies to public elementary and secondary schools, community colleges and state-owned or state-leased essential services building(s)]:*
    - *2.1. Sections 1.1 and 1.9.2.1 of Chapter 1, Division I.*
    - *2.2. Sections 102.1, 102.2, 102.3, 102.4, 102.5, 104.2.3, 104.9, 104.10, 106.1, 107.2.5, 110.3.5 and 110.3.7 of Chapter 1, Division II.*

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1.9.2.1.2 Applicable building standards. *California Building Standards Code, Title 24, Parts 2, 3, 4, 5, 6, 9, 10, 11 and 12, California Code of Regulations, for school buildings, community colleges and state-owned or state-leased essential service buildings.*

The provisions of Title 24, Part 2, as adopted and amended by the Division of the State Architect—Structural Safety, shall apply to the applications listed in Section 1.9.2.1.

The Division of the State Architect—Structural Safety adopts the following building standards in Title 24, Part 2:

Chapters 2 through 10, 12, 14, 15, 16A, 17A, 18A, 19A, 20, 21A, 22A, 23, 24, 25, 26, 30, 31, 32, 33 and 35.

1.9.2.1.3 Identification of amendments. *Division of the State Architect—Structural Safety amendments in this code appear preceded with the acronym* ***[DSA-SS].***

Exception: *Chapters 16A, 17A, 18A, 19A, 21A and 22A—Amendments appearing in these chapters without an acronym have been co-adopted by DSA-SS and OSHPD.*

1.9.2.1.4 Reference to other chapters. *Where reference is made within the California Building Standards Code (CBSC) to sections in Chapters 16, 17, 18, 19, 21 and 22, the respective sections in Chapters 16A, 17A, 18A, 19A, 21A and 22A shall apply instead.*

1.9.2.2 DSA-SS/CC Division of the State Architect- Structural Safety/Community Colleges

Application—*Community Colleges. The Division of the State Architect has been delegated the authority by the Department of General Services to promulgate alternate building standards for application to community colleges, which a community college may elect to use in lieu of standards promulgated by DSA-SS in accordance with Section 1.9.2.1.*

Enforcing agency—*Division of the State Architect- Structural Safety/Community Colleges (DSA-SS/CC)*

The Division of the State Architect has been delegated the authority by the Department of General Services to review and approve the design and oversee construction of community colleges electing to use the alternative building standards as provided in this section.

Authority cited—*Education Code Section 81053.*

Reference—*Education Code Sections 81052, 81053 and 81130 through 81147.*

1.9.2.2.1 Applicable administrative standards.

1. ***Title 24, Part 1, California Code of Regulations:***
   - 1.1. *Sections 4-301 through 4-355, Group 1, and Sections 4-401 through 4-435, Group 2, Chapter 4.*
2. ***Title 24, Part 2, California Code of Regulations:***
   - 2.1. *Sections 1.1 and 1.9.2 of Chapter 1, Division I.*
   - 2.2. *Sections 102.1, 102.2, 102.3, 102.4, 102.5, 104.2.3, 104.9, 104.10, 106.1, 107.2.5, 110.3.5 and 110.3.7 of Chapter 1, Division II.*

1.9.2.2.2 Applicable building standards. *California Building Standards Code, Title 24, Parts 2, 3, 4, 5, 6, 9, 10, 11 and 12, California Code of Regulations.*

The Division of the State Architect-Structural Safety/Community Colleges [DSA-SS/CC] adopts the following building standards in Title 24, Part 2:

Chapters 2 through 10, 12, 14, 15, 16, 17A, 18A, 19, 20, 21, 22, 23, 24, 25, 26, 30, 31, 32, 33 and 35.

1.9.2.2.3 Identification of amendments. *Division of the State Architect—Structural Safety/Community Colleges amendments in this code appear preceded with the acronym* ***[DSA-SS/CC].***

Exception: *Chapters 17A, and 18A—Amendments appearing in these chapters without an acronym have been co-adopted by DSA-SS, DSA-SS/CC and OSHPD.*

1.9.2.2.4 Reference to other chapters. *Where reference is made within the California Building Standards Code (CBSC) to sections in Chapters 17 and 18, the respective sections in Chapters 17A and 18A shall apply instead.*

SECTION 1.10—DEPARTMENT OF HEALTH CARE ACCESS AND INFORMATION/OFFICE OF STATEWIDE HOSPITAL PLANNING AND DEVELOPMENT

1.10.1 OSHPD 1 and OSHPD 1R. *Specific scope of application of the agency responsible for enforcement, enforcement agency and the specific authority to adopt and enforce such provisions of this code, unless otherwise stated.*

Application—*[OSHPD 1] General acute care hospital buildings. [OSHPD 1R] Nonconforming hospital SPC or freestanding buildings that have been removed from acute-care service.*

Enforcing agency—*Health Care Access and Information/Office of Statewide Hospital Planning and Development (OSHPD). The office shall enforce the California Energy Commission—Energy Regulations, the Division of the State Architect—Access Compliance regulations and the regulations of the Office of the State Fire Marshal for the above stated facility types.*

1.10.1.1 Applicable administrative standards.

1. *Title 24, Part 1, California Code of Regulations: Chapters 6 and 7.*
2. *Title 24, Part 2, California Code of Regulations: Sections 1.1 and 1.10, Chapter 1, Division I, and as adopted in Chapter 1, Division II.*

1.10.1.2 Applicable building standards. *California Building Standards Code, Title 24, Parts 2, 3, 4, 5, 6, 9, 10 and 11.*

The provisions of Title 24, Part 2, as adopted and amended by OSHPD, shall apply to the applications listed in Section 1.10.1.

OSHPD 1 adopts the following building standards in Title 24, Part 2:

Chapters 2 through 10, 12, 14, 15, 16A, 17A, 18A, 19A, 20, 21A, 22A, 23, 24, 25, 26, 30, 31, 32, 33, 35 and Appendix L.

OSHPD 1R adopts the following building standards in Title 24, Part 2:

Chapters 2 through 10, 12, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 30, 31, 32, 33 and 35.

1.10.1.3 Identification of amendments. *For applications listed in Section 1.10.1, amendments appear in this code preceded with the acronym [OSHPD 1], unless the entire chapter is applicable. For nonconforming hospital buildings removed from acute-care service, amendments are preceded with the acronym [OSHPD 1R].*

1.10.1.4 Reference to other chapters. *Where reference is made within this code to sections in Chapters 16, 17, 18, 19, 21 and 22, the respective sections in Chapters 16A, 17A, 18A, 19A, 21A and 22A shall apply instead for hospital buildings under OSHPD 1.*

Authority—*Health and Safety Code Sections 127010, 127015, 1275 and 129850.*

References—*Health and Safety Code Sections 19958, 127010, 127015, 129680, 1275 and 129675 through 130070.*

1.10.2 OSHPD 2. *Specific scope of application of the agency responsible for enforcement, enforcement agency and the specific authority to adopt and enforce such provisions of this code, unless otherwise stated.*

Application—*Skilled nursing facility and intermediate care facility buildings.*

Enforcing agency—*Health Care Access and Information/Office of Statewide Hospital Planning and Development (OSHPD). The office shall also enforce the California Energy Commission—Energy Regulations, the Division of the State Architect—Access Compliance regulations and the regulations of the Office of the State Fire Marshal for the above-stated facility type.*

1.10.2.1 Applicable administrative standards.

1. *Title 24, Part 1, California Code of Regulations: Chapter 7.*
2. *Title 24, Part 2, California Code of Regulations: Sections 1.1 and 1.10, Chapter 1, Division I, and as adopted in Chapter 1, Division II.*

1.10.2.2 Applicable building standards. *California Building Standards Code, Title 24, Parts 2, 3, 4, 5, 6, 9, 10 and 11.*

The provisions of Title 24, Part 2, as adopted and amended by OSHPD, shall apply to the applications listed in Section 1.10.2.

OSHPD 2 adopts the following building standards in Title 24, Part 2:

Chapters 2 through 10, 12, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 30, 31, 32, 33 and 35.

1.10.2.3 Identification of amendments. *For applications listed in Section 1.10.2, amendments appear in this code preceded with the acronym [OSHPD 2].*

Authority—*Health and Safety Code Sections 127010, 127015, 1275 and 129850.*

References—*Health and Safety Code Sections 127010, 127015, 1275 and 129680.*

1.10.3 OSHPD 3. *Specific scope of application of the agency responsible for enforcement, enforcement agency and the specific authority to adopt and enforce such provisions of this code, unless otherwise stated.*

Application—*Licensed clinics and any freestanding building under a hospital license where outpatient clinical services are provided.*

Enforcing agency—*Local building department.*

1.10.3.1 Applicable administrative standards.

1. *Title 24, Part 1, California Code of Regulations: Chapter 7.*
2. *Title 24, Part 2, California Code of Regulations: Sections 1.1 and 1.10, Chapter 1, Division I, and as adopted in Chapter 1, Division II.*

1.10.3.2 Applicable building standards. *California Building Standards Code, Title 24, Parts 2, 3, 4, 5, 6, 9, 10 and 11.*

The provisions of Title 24, Part 2, as adopted and amended by OSHPD, shall apply to the applications listed in Section 1.10.3.

OSHPD 3 adopts the following building standards in Title 24, Part 2:

Chapter 12.

1.10.3.3 Identification of amendments. *For applications listed in Section 1.10.3, amendments appear in this code without the acronym [OSHPD 3]. Adoptions are shown in the adoption matrix.*

Authority—*Health and Safety Code Sections 127010, 127015 and 1226.*

References—*Health and Safety Code Sections 127010, 127015, 129885 and 1226, Government Code Section 54350 and State Constitution Article 11, Section 7.*

1.10.4 OSHPD 4. *Specific scope of application of the agency responsible for enforcement, enforcement agency and the specific authority to adopt and enforce such provisions of this code, unless otherwise stated.*

Application—*Correctional treatment centers.*

Enforcing agency—*Health Care Access and Information/Office of Statewide Hospital Planning and Development (OSHPD). The office shall also enforce the California Energy Commission—Energy Regulations, the Division of the State Architect—Access Compliance regulations and the regulations of the Office of the State Fire Marshal for the above-stated facility types.*

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1.10.4.1 Applicable administrative standards.

1. *Title 24, Part 1, California Code of Regulations: Chapter 7.*
2. *Title 24, Part 2, California Code of Regulations: Sections 1.1 and 1.10, Chapter 1, Division I, and as adopted in Chapter 1, Division II.*

1.10.4.2 Applicable building standards. *California Building Standards Code, Title 24, Parts 2, 3, 4, 5, 6, 9, 10 and 11.*

The provisions of Title 24, Part 2, as adopted and amended by OSHPD, shall apply to the applications listed in Section 1.10.4.

OSHPD 4 adopts the following building standards in Title 24, Part 2:

Chapters 2 through 10, 12, 14, 15, 16A, 17A, 18A, 19A, 20, 21A, 22A, 23, 24, 25, 26, 30, 31, 32, 33, 35 and Appendix L.

1.10.4.3 Identification of amendments. *For applications listed in Section 1.10.4, amendments appear in this code preceded with the acronym [OSHPD 4], unless the entire chapter is applicable.*

1.10.4.4 Reference to other chapters. *Where reference is made within this code to sections in Chapters 16, 17, 18, 19, 21 and 22, the respective sections in Chapters 16A, 17A, 18A, 19A, 21A and 22A shall apply instead.*

Authority—*Health and Safety Code Sections 127010, 127015 and 129790.*

References—*Health and Safety Code Sections 127010, 127015, 1275 and 129675 through 130070.*

1.10.5 OSHPD 5. *Specific scope of application of the agency responsible for enforcement, enforcement agency and the specific authority to adopt and enforce such provisions of this code, unless otherwise stated.*

Application—*Acute psychiatric hospital buildings.*

Enforcing agency—*Health Care Access and Information/Office of Statewide Hospital Planning and Development (OSHPD). The office shall also enforce the California Energy Commission—Energy Regulations, the Division of the State Architect—Access Compliance regulations and the regulations of the Office of the State Fire Marshal for the above-stated facility type.*

1.10.5.1 Applicable administrative standards.

1. *Title 24, Part 1, California Code of Regulations: Chapter 7.*
2. *Title 24, Part 2, California Code of Regulations: Sections 1.1 and 1.10, Chapter 1, Division I, and as adopted in Chapter I, Division II.*

1.10.5.2 Applicable building standards. *California Building Standards Code, Title 24, Parts 2, 3, 4, 5, 6, 9, 10 and 11.*

The provision of Title 24, Part 2, as adopted and amended by OSHPD, shall apply to the applications listed in Section 1.10.5.

OSHPD 5 adopts the following building standards in Title 24, Part 2:

Chapters 2 through 10, 12, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 30, 31, 32, 33 and 35.

1.10.5.3 Identification of amendments. *For applications listed in Section 1.10.5, amendments appear in this code preceded with the acronym [OSHPD 5].*

Authority—*Health and Safety Code Sections 127010, 127015, 1275 and 129850.*

References—*Health and Safety Code Sections 127010, 127015, 129680, 1275 and 129675 through 130070.*

1.10.6 OSHPD 6. *Specific scope of application of the agency responsible for enforcement, enforcement agency and the specific authority to adopt and enforce such provisions of this code, unless otherwise stated.*

Application*—Chemical dependency recovery hospital not within an acute care hospital building or an acute psychiatric facility.*

Enforcing agency*—Local building department.*

1.10.6.1 Applicable administrative standards.

1. *Title 24, Part 1, California Code of Regulations: Chapter 7.*
2. *Title 24, Part 2, California Code of Regulations: Sections 1.1 and 1.10, Chapter 1, Division I, and as adopted in Chapter I, Division II.*

1.10.6.2 Applicable building standards. *California Building Standards Code, Title 24, Parts 2, 3, 4, 5, 6, 9, 10 and 11.*

The provision of Title 24, Part 2, as adopted and amended by OSHPD, shall apply to the applications listed in Section 1.10.6.

OSHPD 6 adopts the following building standards in Title 24, Part 2:

Chapters 2 through 10, 12, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 30, 31, 32, 33 and 35.

1.10.6.3 Identification of amendments. *For applications listed in Section 1.10.6, amendments appear in this code preceded with the acronym [OSHPD 6].*

Authority—*Health and Safety Code Sections 1275, 127010 and 129850.*

References—*Health and Safety Code Sections 1250.3, 129680 and 129675 through 130070.*

SECTION 1.11—OFFICE OF THE STATE FIRE MARSHAL

1.11.1 SFM—Office of the State Fire Marshal. *Specific scope of application of the agency responsible for enforcement, the enforcement agency and the specific authority to adopt and enforce such provisions of this code, unless otherwise stated.*

Application:

Institutional, educational or any similar occupancy. *Any building or structure used or intended for use as an asylum, jail, prison, mental hospital, hospital, sanitarium, home for the elderly, children's nursery, children's home or institution, school or any similar occupancy of any capacity.*

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Authority cited—*Health and Safety Code Section 13143.*

Reference—*Health and Safety Code Section 13143.*

Assembly or similar place of assemblage. *Any theater, dancehall, skating rink, auditorium, assembly hall, meeting hall, nightclub, fair building or similar place of assemblage where 50 or more persons may gather together in a building, room or structure for the purpose of amusement, entertainment, instruction, deliberation, worship, drinking or dining, awaiting transportation, or education.*

Authority cited—*Health and Safety Code Section 13143.*

Reference—*Health and Safety Code Section 13143.*

Small family day-care homes.

Authority cited—*Health and Safety Code Sections 1597.45, 1597.54, 13143 and 17921.*

Reference—*Health and Safety Code Section 13143.*

Large family day-care homes.

Authority cited—*Health and Safety Code Sections 1597.46, 1597.54 and 17921.*

Reference—*Health and Safety Code Section 13143.*

Residential facilities and residential facilities for the elderly.

Authority cited—*Health and Safety Code Section 13133.*

Reference—*Health and Safety Code Section 13143.*

Any state institution or other state-owned or specified state-occupied building.

Specified state-occupied buildings. *Any building, structure or area that meets any of the following criteria:*

1. *A building where the state has contracted into a build-to-suit lease.*
2. *A courthouse holding facility or trial court with a detention area.*
3. *A building used by the Department of Corrections and Rehabilitation (CDCR) as a community correctional reentry center.*
4. *100 percent state occupied.*
5. *State-occupied areas in a state-leased building that is a high-rise and is 75 percent of the net area floor space or more occupied by state entities.*
6. *State-occupied areas in a building that contains 5,000 square feet (465 m^2) or more space of state-leased Group H or Group L occupancy.*
7. *A state-leased building with facilities with the primary purpose of housing state records and/or state artifacts of historical significance.*
8. *Properties leased by California State University (CSU).*
9. *State institutions and their real property.*
10. *CAL FIRE occupied areas in leased buildings.*
11. *State-leased facilities where the governing body's fire protection services rely on an all-volunteer fire department.*

Authority cited—*Health and Safety Code Sections 13108, 13145, 13146, 16022.5 and 17921.*

Reference—*Health and Safety Code Sections 13108, 13143, 13145, 13146, 16022.5 and 17921.*

High-Rise structures.

Authority cited—*Health and Safety Code Section 13211.*

Reference—*Health and Safety Code Section 13143.*

Motion picture production studios.

Authority cited—*Health and Safety Code Section 13143.1.*

Reference—*Health and Safety Code Section 13143.*

Organized camps.

Authority cited—*Health and Safety Code Section 18897.3.*

Reference—*Health and Safety Code Section 13143.*

Residential. *All hotels, motels, lodging houses, apartment houses and dwellings, including congregate residences and buildings and structures accessory thereto.*

Multiple-story structures existing on January 1, 1975, let for human habitation, including and limited to, hotels, motels and apartment houses, less than 75 feet (22 860 mm) above the lowest floor level having building access, wherein rooms used for sleeping are let above the ground floor.

Authority cited—*Health and Safety Code Sections 13143.2 and 17921.*

Reference—*Health and Safety Code Section 13143.*

Residential care facilities. *Certified family care homes, out-of-home placement facilities, halfway houses, drug and/or alcohol rehabilitation facilities and any building or structure used or intended for use as a home or institution for the housing of any person of any age*

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when such person is referred to or placed within such home or institution for protective social care and supervision services by any governmental agency.

Authority cited—*Health and Safety Code Section 13143.6.*

Reference—*Health and Safety Code Section 13143.*

Tents, awnings or other fabric enclosures used in connection with any occupancy.

Authority cited—*Health and Safety Code Section 13116.*

Reference—*Health and Safety Code Section 13143.*

Fire alarm devices, equipment and systems in connection with any occupancy.

Authority cited—*Health and Safety Code Section 13114.*

Reference—*Health and Safety Code Section 13143.*

Hazardous materials.

Authority cited—*Health and Safety Code Section 13143.9.*

Reference—*Health and Safety Code Section 13143.*

Flammable and combustible liquids.

Authority cited—*Health and Safety Code Section 13143.6.*

Reference—*Health and Safety Code Section 13143.*

Public School Automatic Fire Detection, Alarm and Sprinkler Systems.

Authority cited—*Health and Safety Code Section 13143 and California Education Code Article 7.5, Sections 17074.50, 17074.52 and 17074.54.*

Reference—*Government Code Section 11152.5, Health and Safety Code Section 13143 and California Education Code Chapter 12.5, Leroy F. Greene School Facilities Act of 1998, Article 1.*

Wildland-Urban Interface Fire Area.

Authority cited—*Health and Safety Code Sections 13143, 13108.5(a) and 18949.2(b) and (c) and Government Code Section 51189.*

Reference—*Health and Safety Code Sections 13143, Government Code Sections 51176, 51177, 51178 and 51179 and Public Resources Code Sections 4201 through 4204.*

1.11.1.1 Adopting agency identification. *The provisions of this code applicable to buildings identified in this Subsection 1.11.1 will be identified in the Matrix Adoption Tables under the acronym SFM.*

1.11.2 Duties and powers of the enforcing agency.

1.11.2.1 Enforcement.

1.11.2.1.1 *The responsibility for enforcement of building standards adopted by the State Fire Marshal and published in the California Building Standards Code relating to fire and panic safety and other regulations of the State Fire Marshal shall, except as provided in Section 1.11.2.1.2, be as follows:*

1. *The city, county or city and county with jurisdiction in the area affected by the standard or regulation shall delegate the enforcement of the building standards relating to fire and panic safety and other regulations of the State Fire Marshal as they relate to Group R-3 occupancies, as described in Section 310.1 of Part 2 of the California Building Standards Code, to either of the following:*
    1.1. *The chief of the fire authority of the city, county or city and county, or an authorized representative.*
    1.2. *The chief building official of the city, county or city and county, or an authorized representative.*
2. *The chief of any city or county fire department or of any fire protection district, and authorized representatives, shall enforce within the jurisdiction the building standards and other regulations of the State Fire Marshal, except those described in Item 1 or 4.*
3. *The State Fire Marshal shall have authority to enforce the building standards and other regulations of the State Fire Marshal in areas outside of corporate cities and districts providing fire protection services.*
4. *The State Fire Marshal shall have authority to enforce the building standards and other regulations of the State Fire Marshal in corporate cities and districts providing fire protection services on request of the chief fire official or the governing body.*
5. *Any fee charged pursuant to the enforcement authority of this section shall not exceed the estimated reasonable cost of providing the service for which the fee is charged pursuant to Section 66014 of the Government Code.*

1.11.2.1.2 *Pursuant to Health and Safety Code Section 13108, and except as otherwise provided in this section, building standards adopted by the State Fire Marshal published in the California Building Standards Code relating to fire and panic safety shall be enforced by the State Fire Marshal in all state-owned buildings, state-occupied buildings and state institutions throughout the state. Upon the written request of the chief fire official of any city, county or fire protection district, the State Fire Marshal may authorize such chief fire official and his or her authorized representatives, in their geographical area of responsibility, to make fire prevention inspections of state-owned or state-occupied buildings, other than state institutions, for the purpose of enforcing the regulations relating to fire and panic safety adopted by the State Fire Marshal pursuant to this section and building standards relating to fire and*

panic safety published in the California Building Standards Code. Authorization from the State Fire Marshal shall be limited to those fire departments or fire districts which maintain a fire prevention bureau staffed by paid personnel.

Pursuant to Health and Safety Code Section 13108, any requirement or order made by any chief fire official who is authorized by the State Fire Marshal to make fire prevention inspections of state-owned or state-occupied buildings, other than state institutions, may be appealed to the State Fire Marshal. The State Fire Marshal shall, upon receiving an appeal and subject to the provisions of Chapter 5 (commencing with Section 18945) of Part 2.5 of Division 13 of the Health and Safety Code, determine if the requirement or order made is reasonably consistent with the fire and panic safety regulations adopted by the State Fire Marshal and building standards relating to fire and panic safety published in the California Building Code.

Any person may request a code interpretation from the State Fire Marshal relative to the intent of any regulation or provision adopted by the State Fire Marshal. When the request relates to a specific project, occupancy or building, the State Fire Marshal shall review the issue with the appropriate local enforcing agency prior to rendering such code interpretation.

***1.11.2.1.3** Pursuant to Health and Safety Code Section 13112, any person who violates any order, rule or regulation of the State Fire Marshal is guilty of a misdemeanor punishable by a fine of not less than $100.00 or more than $500.00, or by imprisonment for not less than six months, or by both. A person is guilty of a separate offense each day during which he or she commits, continues or permits a violation of any provision of, or any order, rule or regulation of, the State Fire Marshal as contained in this code.*

Any inspection authority who, in the exercise of his or her authority as a deputy State Fire Marshal, causes any legal complaints to be filed or any arrest to be made shall notify the State Fire Marshal immediately following such action.

***1.11.2.2 Right of entry.** The fire chief of any city, county or fire protection district, or such person's authorized representative, may enter any state institution or any other state-owned or state-occupied building for the purpose of preparing a fire suppression preplanning program or for the purpose of investigating any fire in a state-occupied building.*

The State Fire Marshal, his or her deputies or salaried assistants, the chief of any city or county fire department or fire protection district and his or her authorized representatives may enter any building or premises not used for dwelling purposes at any reasonable hour for the purpose of enforcing this chapter. The owner, lessee, manager or operator of any such building or premises shall permit the State Fire Marshal, his or her deputies or salaried assistants and the chief of any city or county fire department or fire protection district and his or her authorized representatives to enter and inspect them at the time and for the purpose stated in this section.

1.11.2.3 More restrictive fire and panic safety building standards.

***1.11.2.3.1** Any fire protection district organized pursuant to Health and Safety Code Part 2.7 (commencing with Section 13800) of Division 12 may adopt building standards relating to fire and panic safety that are more stringent than those building standards adopted by the State Fire Marshal and contained in the California Building Standards Code. For these purposes, the district board shall be deemed a legislative body and the district shall be deemed a local agency. Any changes or modifications that are more stringent than the requirements published in the California Building Standards Code relating to fire and panic safety shall be subject to Section 1.1.8.1.*

***1.11.2.3.2** Any fire protection district that proposes to adopt an ordinance pursuant to this section shall, not less than 30 days prior to noticing a proposed ordinance for public hearing, provide a copy of that ordinance, together with the adopted findings made pursuant to Section 1.11.2.3.1, to the city, county, or city and county where the ordinance will apply. The city, county, or city and county may provide the district with written comments, which shall become part of the fire protection district's public hearing record.*

***1.11.2.3.3** The fire protection district shall transmit the adopted ordinance to the city, county, or city and county where the ordinance will apply. The legislative body of the city, county, or city and county may ratify, modify or deny an adopted ordinance and transmit its determination to the district within 15 days of the determination. Any modification or denial of an adopted ordinance shall include a written statement describing the reasons for any modifications or denial. No ordinance adopted by the district shall be effective until ratification by the city, county, or city and county where the ordinance will apply. Upon ratification of an adopted ordinance, the city, county or city and county shall file a copy of the findings of the district, and any findings of the city, county, or city and county, together with the adopted ordinance expressly marked and identified to which each finding refers, in accordance with Section 1.1.8.1(3).*

***1.11.2.4 Request for alternate means of protection.** Requests for approval to use an alternative material, assembly or materials, equipment, method of construction, method of installation of equipment or means of protection shall be made in writing to the enforcing agency by the owner or the owner's authorized representative and shall be accompanied by a full statement of the conditions. Sufficient evidence or proof shall be submitted to substantiate any claim that may be made regarding its conformance. The enforcing agency may require tests and the submission of a test report from an approved testing organization as set forth in Title 19, California Code of Regulation, to substantiate the equivalency of the proposed alternative means of protection.*

When a request for alternate means of protection involves hazardous materials, the authority having jurisdiction may consider implementation of the findings and recommendations identified in a Risk Management Plan (RMP) developed in accordance with Title 19, Division 5, Chapter 2, Article 3.

Approval of a request for use of an alternative material, assembly of materials, equipment, method of construction, method of installation of equipment or means of protection made pursuant to these provisions shall be limited to the particular case covered by request and shall not be construed as establishing any precedent for any future request.

***1.11.2.5 Appeals.** When a request for an alternate means of protection has been denied by the enforcing agency, the applicant may file a written appeal to the State Fire Marshal for consideration of the applicant's proposal. In considering such appeal, the State Fire Marshal may seek the advice of the State Board of Fire Services. The State Fire Marshal shall, after considering all of the facts*

presented, including any recommendations of the State Board of Fire Services, determine if the proposal is for the purposes intended, at least equivalent to that specified in these regulations in quality, strength, effectiveness, fire resistance, durability and safety, and shall transmit such findings and any recommendations to the applicant and to the enforcing agency.

1.11.3 Construction documents.

1.11.3.1 Public schools. *Plans and specifications for the construction, alteration or addition to any building owned, leased or rented by any public school district shall be submitted to the Division of the State Architect.*

1.11.3.2 Movable walls and partitions. *Plans or diagrams shall be submitted to the enforcing agency for approval before the installation of, or rearrangement of, any movable wall or partition in any occupancy. Approval shall be granted only if there is no increase in the fire hazard.*

1.11.3.3 New construction high-rise buildings.

1. *Complete plans or specifications, or both, shall be prepared covering all work required to comply with new construction high-rise buildings. Such plans and specifications shall be submitted to the enforcing agency having jurisdiction.*
2. *All plans and specifications shall be prepared under the responsible charge of an architect or a civil or structural engineer authorized by law to develop construction plans and specifications, or by both such architect and engineer. Plans and specifications shall be prepared by an engineer duly qualified in that branch of engineering necessary to perform such services. Administration of the work of construction shall be under the charge of the responsible architect or engineer except that where plans and specifications involve alterations or repairs, such work of construction may be administered by an engineer duly qualified to perform such services and holding a valid certificate under Chapter 7 (commencing with Section 65700) of Division 3 of the Business and Professions Code for performance of services in that branch of engineering in which said plans, specifications and estimates and work of construction are applicable.*

This section shall not be construed as preventing the design of fire-extinguishing systems by persons holding a C-16 license issued pursuant to Division 3, Chapter 9, Business and Professions Code. In such instances, however, the responsibility charge of this section shall prevail.

1.11.3.4 Existing high-rise buildings.

1. *Complete plans or specifications, or both, shall be prepared covering all work required by California Fire Code Chapter 11 and California Existing Building Code for existing high-rise buildings. Such plans or specifications shall be submitted to the enforcing agency having jurisdiction.*
2. *When new construction is required to conform with the provisions of these regulations, complete plans or specifications, or both, shall be prepared in accordance with the provisions of this subsection. As used in this section, "new construction" is not intended to include repairs, replacements or minor alterations which do not disrupt or appreciably add to or affect the structural aspects of the building.*

1.11.3.5 Retention of plans. *Refer to Building Standards Law, Health and Safety Code Sections 19850 and 19851 for permanent retention of plans.*

1.11.4 Fees.

1.11.4.1 Other fees. *Pursuant to Health and Safety Code Section 13146.2, a city, county or district which inspects a hotel, motel, lodging house or apartment house may charge and collect a fee for the inspection from the owner of the structure in an amount, as determined by the city, county or district, sufficient to pay its costs of that inspection.*

1.11.4.2 Large family day-care. *Pursuant to Health and Safety Code Section 1597.46, Large Family Day-Care Homes, the local government shall process any required permit as economically as possible, and fees charged for review shall not exceed the costs of the review and permit process.*

1.11.4.3 High-Rise. *Pursuant to Health and Safety Code Section 13217, High-Rise Structure Inspection: Fees and costs, a local agency which inspects a high-rise structure pursuant to Health and Safety Code Section 13217 may charge and collect a fee for the inspection from the owner of the high-rise structure in an amount, as determined by the local agency, sufficient to pay its costs of that inspection.*

1.11.4.4 Fire clearance pre-inspection. *Pursuant to Health and Safety Code Section 13235, Fire Clearance Preinspection, fee, upon receipt of a request from a prospective licensee of a community care facility, as defined in Section 1502, of a residential care facility for the elderly, as defined in Section 1569.2, or of a child day care facility, as defined in Section 1596.750, the local fire enforcing agency, as defined in Sections 13145 and 13146, or State Fire Marshal, whichever has primary jurisdiction, shall conduct a preinspection of the facility prior to the final fire clearance approval. At the time of the preinspection, the primary fire enforcing agency shall price consultation and interpretation of the fire safety regulations and shall notify the prospective licensee of the facility in writing of the specific fire safety regulations which shall be enforced in order to obtain fire clearance approval. A fee equal to, but not exceeding, the actual cost of the preinspection services may be charged for the preinspection of a facility.*

1.11.4.5 Care facilities. *The primary fire enforcing agency shall complete the final fire clearance inspection for a community care facility, residential care facility for the elderly, or child day care facility within 30 days of receipt of the request for the final inspection, or as of the date the prospective facility requests the final prelicensure inspection by the State Department of Social Services, whichever is later.*

Pursuant to Health and Safety Code Section 13235, a preinspection fee equal to, but not exceeding, the actual cost of the preinspection services may be charged for the preinspection of a facility.

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Pursuant to Health and Safety Code Section 13131.5, a reasonable final inspection fee, not to exceed the actual cost of inspection services necessary to complete a final inspection may be charged for occupancies classified as residential care facilities for the elderly (RCFE).

Pursuant to Health and Safety Code Section 1569.84, neither the State Fire Marshal nor any local public entity shall charge any fee for enforcing fire inspection regulations pursuant to state law or regulation or local ordinance, with respect to residential care facilities for the elderly (RCFE) which service six or fewer persons.

1.11.4.6 Requests of the Office of the State Fire Marshal. *Whenever a local authority having jurisdiction requests that the State Fire Marshal perform plan review and/or inspection services related to a building permit, the applicable fees for such shall be payable to the Office of the State Fire Marshal.*

1.11.5 Inspections. *Work performed subject to the provisions of this code shall comply with the inspection requirements of Sections 110.1, 110.3, 110.3.4, 110.3.5, 110.3.6, 110.3.8, 110.3.9, 110.3.10, 110.5 and 110.6 as adopted by the Office of the State Fire Marshal.*

1.11.5.1 Existing Group I-1 or R occupancies. *Licensed 24-hour care in a Group I-1 or R occupancy in existence and originally classified under previously adopted state codes shall be reinspected under the appropriate previous code, provided there is no change in the use or character which would place the facility in a different occupancy group.*

1.11.6 Certificate of Occupancy. *A Certificate of Occupancy shall be issued as specified in Section 111.*

Exception: *Certificates of occupancy are not required for work exempt from permits in accordance with Section 105.2 of the California Building Code.*

1.11.7 Temporary structures and uses. *See Section 108.*

1.11.8 Service utilities. *See Section 112.*

1.11.9 Stop work order. *See Section 115.*

1.11.10 Unsafe buildings, structures and equipment. *See Section 116.*

1.11.11 Adopting Agency Identification. *The provisions of this code applicable to buildings identified in this Section 1.11 will be identified in the Matrix Adoption Tables under the acronym SFM.*

SECTION 1.12—STATE LIBRARIAN

1.12.1 *Specific scope of application of the agency responsible for enforcement, the enforcement agency and the specific authority to adopt and enforce such provisions of this code, unless otherwise stated.*

Application—*Public library construction and renovation using funds from the California Library Construction and Renovation Bond Act of 1988.*

Enforcing agency—*State librarian.*

Authority cited—*Education Code Sections 19950 through 19981.*

Reference—*Education Code Sections 19950 through 19981.*

SECTION 1.13—DEPARTMENT OF WATER RESOURCES
RESERVED

SECTION 1.14—CALIFORNIA STATE LANDS COMMISSION

1.14.1 *Specific scope of application of the agency responsible for enforcement, the enforcement agency and the specific authority to adopt and enforce such provisions of this code, unless otherwise stated.*

Application—*Marine oil terminals.*

Enforcing agency—*California State Lands Commission.*

Authority cited—*Public Resources Code Section 8755.*

Reference—*Public Resources Code Section 8755.*

DIVISION II
SCOPE AND ADMINISTRATION

User notes:

About this chapter: Chapter 1 establishes the limits of applicability of the code and describes how the code is to be applied and enforced. Chapter 1 is in two parts: Part 1—Scope and Application (Sections 101–102) and Part 2—Administration and Enforcement (Sections 103–116). Section 101 identifies which buildings and structures come under its purview and references other I-Codes as applicable. Standards and codes are scoped to the extent referenced (see Section 102.4).

This code is intended to be adopted as a legally enforceable document and it cannot be effective without adequate provisions for its administration and enforcement. The provisions of Chapter 1 establish the authority and duties of the code official appointed by the authority having jurisdiction and also establish the rights and privileges of the design professional, contractor and property owner. Chapter 1 is largely concerned with maintaining "due process of law" in enforcing the building performance criteria contained in the body of the code.

ICC code development note: Code change proposals to this chapter will be considered by the Administrative Code Development Committee during the 2025 (Group B) Code Development Cycle.

Section 104 was revised for the 2024 edition. For complete information, see the Relocations table in the Preface of this code.

Note: *Sections adopted or amended by state agencies are specifically indicated by an agency banner.*

PART 1—SCOPE AND APPLICATION

SECTION 101—SCOPE AND GENERAL REQUIREMENTS

[A] 101.1 Title. These regulations shall be known as the *Building Code* of [NAME OF JURISDICTION], hereinafter referred to as "this code."

[A] 101.2 Scope. The provisions of this code shall apply to the construction, alteration, relocation, enlargement, replacement, repair, equipment, use and occupancy, location, maintenance, removal and demolition of every building or structure or any appurtenances connected or attached to such buildings or structures.

Exception: Detached one- and two-family dwellings and townhouses not more than three stories above grade plane in height with a separate means of egress, and their accessory structures not more than three stories above grade plane in height, shall comply with this code or the *California Residential Code*.

[A] 101.2.1 Appendices. Provisions in the appendices shall not apply unless specifically adopted.

[A] 101.3 Purpose. The purpose of this code is to establish the minimum requirements to provide a reasonable level of safety, health and general welfare through structural strength, means of egress, stability, sanitation, light and ventilation, energy conservation, and for providing a reasonable level of life safety and property protection from the hazards of fire, explosion or dangerous conditions, and to provide a reasonable level of safety to firefighters and emergency responders during emergency operations.

[A] 101.4 Referenced codes. The other codes specified in Sections 101.4.1 through 101.4.7 and referenced elsewhere in this code shall be considered to be part of the requirements of this code to the prescribed extent of each such reference.

[A] 101.4.1 Gas. The provisions of the *California Plumbing Code and/or the California Mechanical Code* shall apply to the installation of gas piping from the point of delivery, gas appliances and related accessories as covered in this code. These requirements apply to gas piping systems extending from the point of delivery to the inlet connections of appliances and the installation and operation of residential and commercial gas appliances and related accessories.

[A] 101.4.2 Mechanical. The provisions of the *California Mechanical Code* shall apply to the installation, alterations, repairs and replacement of mechanical systems, including equipment, appliances, fixtures, fittings and appurtenances, including ventilating, heating, cooling, air-conditioning and refrigeration systems, incinerators and other energy-related systems.

[A] 101.4.3 Plumbing. The provisions of the *California Plumbing Code* shall apply to the installation, alteration, repair and replacement of plumbing systems, including equipment, appliances, fixtures, fittings and appurtenances, and where connected to a water or sewage system and all aspects of a medical gas system. The provisions of the *California Plumbing Code* shall apply to private sewage disposal systems.

[A] 101.4.4 Property maintenance. The provisions of the *California Existing Building Code* shall apply to existing structures and premises; equipment and facilities; light, ventilation, space heating, sanitation, life and fire safety hazards; responsibilities of owners, operators and occupants; and occupancy of existing premises and structures.

[A] 101.4.5 Fire prevention. The provisions of the *California Fire Code* shall apply to matters affecting or relating to structures, processes and premises from the hazard of fire and explosion arising from the storage, handling or use of structures, materials or devices; from conditions hazardous to life, property or public welfare in the occupancy of structures or premises; and from the construction, extension, repair, alteration or removal of fire suppression, automatic sprinkler systems and alarm systems or fire hazards in the structure or on the premises from occupancy or operation.

[A] 101.4.6 Energy. The provisions of the *California Energy Code* shall apply to all matters governing the design and construction of buildings for energy efficiency.

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[A] 101.4.7 Existing buildings. The provisions of the *California Existing Building Code* shall apply to matters governing the repair, alteration, change of occupancy, addition to and relocation of existing buildings.

> ***[OSHPD 1]*** *The provisions of Chapters 2, 3A, 4A and 5A of the California Existing Building Code shall apply to all matters governing the repairs, alterations, change of occupancy, additions and relocation of existing structures and portions thereof under OSHPD jurisdiction. All references to Chapters 3, 4 and 5 of the California Existing Building Code shall be replaced by equivalent provisions in Chapters 3A, 4A and 5A.*

[OSHPD 1R, 2, 4 & 5] *The provisions of the California Existing Building Code, Chapters 2, 3, 4 and 5 shall apply to all matters governing the repairs, alterations, change of occupancy, additions and relocation of existing structures and portions thereof under OSHPD jurisdiction.*

101.4.8 Wildland-urban interface. *The provisions of Part 7, the California Wildland-Urban Interface Code shall apply to buildings and structures built in the wildland-urban interface (WUI) or a Fire Hazard Severity Zone.*

SECTION 102—APPLICABILITY

[A] 102.1 General. Where there is a conflict between a general requirement and a specific requirement, the specific requirement shall be applicable. Where, in any specific case, different sections of this code specify different materials, methods of construction or other requirements, the most restrictive shall govern.

[A] 102.2 Other laws. The provisions of this code shall not be deemed to nullify any provisions of local, state or federal law.

[A] 102.3 Application of references. References to chapter or section numbers, or to provisions not specifically identified by number, shall be construed to refer to such chapter, section or provision of this code.

[A] 102.4 Referenced codes and standards. The codes and standards referenced in this code shall be considered to be part of the requirements of this code to the prescribed extent of each such reference and as further regulated in Sections 102.4.1 *through 102.4.4.*

[A] 102.4.1 Conflicts. Where conflicts occur between provisions of this code and referenced codes and standards, the provisions of this code shall apply.

[A] 102.4.2 Provisions in referenced codes and standards. Where the extent of the reference to a referenced code or standard includes subject matter that is within the scope of this code or the *California* Codes specified in Section 101.4, the provisions of this code or the *California* Codes specified in Section 101.4, as applicable, shall take precedence over the provisions in the referenced code or standard.

102.4.3 Code references. [OSHPD 1, 1R, 2, 3, 4, 5 & 6, DSA-SS & DSA-SS/CC] *All reference to International Codes or other similar codes in referenced standards shall be replaced by equivalent provisions in the California Building Standards Codes.*

102.4.4 Reference in standards. [OSHPD 1, 1R, 2, 3, 4, 5 & 6, DSA-SS & DSA-SS/CC] *All references listed in reference standards shall be replaced by referenced standards listed in Chapter 35 of this code, where applicable, and shall include all amendments to the reference standards in this code.*

[A] 102.5 Partial invalidity. In the event that any part or provision of this code is held to be illegal or void, this shall not have the effect of making void or illegal any of the other parts or provisions.

[A] 102.6 Existing structures. The legal occupancy of any structure existing on the date of adoption of this code shall be permitted to continue without change, except as otherwise specifically provided in this code, the *California Existing Building Code* or the *California Fire Code*.

[A] 102.6.1 Buildings not previously occupied. A building or portion of a building that has not been previously occupied or used for its intended purpose in accordance with the laws in existence at the time of its completion shall comply with the provisions of this code or the *California Residential Code*, as applicable, for new construction or with any current permit for such occupancy.

[A] 102.6.2 Buildings previously occupied. The legal occupancy of any building existing on the date of adoption of this code shall be permitted to continue without change, except as otherwise specifically provided in this code, the *California Fire Code* or *California Existing Building Code*, or as is deemed necessary by the building official for the general safety and welfare of the occupants and the public.

PART 2—ADMINISTRATION AND ENFORCEMENT

SECTION 103—CODE COMPLIANCE AGENCY

[A] 103.1 Creation of enforcement agency. The **[INSERT NAME OF DEPARTMENT]** is hereby created and the official in charge thereof shall be known as the building official. The function of the agency shall be the implementation, administration and enforcement of the provisions of this code.

[A] 103.2 Appointment. The building official shall be appointed by the chief appointing authority of the jurisdiction.

[A] 103.3 Deputies. In accordance with the prescribed procedures of this jurisdiction and with the concurrence of the appointing authority, the building official shall have the authority to appoint a deputy building official, other related technical officers, inspectors and other employees. Such employees shall have powers as delegated by the building official.

SECTION 104—DUTIES AND POWERS OF BUILDING OFFICIAL

[A] 104.1 General. The building official is hereby authorized and directed to enforce the provisions of this code.

[A] 104.2 Determination of compliance. The building official shall have the authority to determine compliance with this code, to render interpretations of this code and to adopt policies and procedures in order to clarify the application of its provisions. Such interpretations, policies and procedures:

1. Shall be in compliance with the intent and purpose of this code.
2. Shall not have the effect of waiving requirements specifically provided for in this code.

[A] 104.2.1 Listed compliance. Where this code or a referenced standard requires equipment, materials, products or services to be listed and a listing standard is specified, the listing shall be based on the specified standard. Where a listing standard is not specified, the listing shall be based on an approved listing criteria. Listings shall be germane to the provision requiring the listing. Installation shall be in accordance with the listing and the manufacturer's instructions, and where required to verify compliance, the listing standard and manufacturer's instructions shall be made available to the building official.

[A] 104.2.2 Technical assistance. To determine compliance with this code, the building official is authorized to require the owner or owner's authorized agent to provide a technical opinion and report. ⬅

[A] 104.2.2.1 Cost. A technical opinion and report shall be provided without charge to the jurisdiction.

[A] 104.2.2.2 Preparer qualifications. The technical opinion and report shall be prepared by a qualified engineer, specialist, laboratory or specialty organization acceptable to the building official. The building official is authorized to require design submittals to be prepared by, and bear the stamp of, a registered design professional.

[A] 104.2.2.3 Content. The technical opinion and report shall analyze the properties of the design, operation or use of the building or premises and the facilities and appurtenances situated thereon to identify and propose necessary recommendations.

[A] 104.2.2.4 Tests. Where there is insufficient evidence of compliance with the provisions of this code, the building official shall have the authority to require tests as evidence of compliance. Test methods shall be as specified in this code or by other recognized test standards. In the absence of recognized test standards, the building official shall approve the testing procedures. Such tests shall be performed by a party acceptable to the building official.

[A] 104.2.3 Alternative materials, design and methods of construction and equipment. The provisions of this code are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed by this code, provided that any such alternative has been approved.

Exception: Performance-based alternative materials, designs or methods of construction and equipment complying with the *International Code Council Performance Code*. This exception shall not apply to alternative structural materials or to alternative structural designs. ***[DSA-SS, DSA-SS/CC]*** *The International Code Council Performance Code is not permitted by DSA.*

[DSA-SS, DSA-SS/CC & OSHPD 1, 1R, 2, 4 & 5] *Alternative system shall satisfy ASCE 7 Section 1.3, unless more restrictive requirements are established by this code for an equivalent system.*

[DSA-SS, DSA-SS/CC] *Alternative systems shall also satisfy the California Administrative Code, Section 4-304.*

[OSHPD 1, 1R, 2, 4 & 5] *Alternative systems shall also satisfy the California Administrative Code, Section 7-104.*

[A] 104.2.3.1 Approval authority. An alternative material, design or method of construction shall be approved where the building official finds that the proposed alternative is satisfactory and complies with Sections 104.2.3 through 104.2.3.7, as applicable.

[A] 104.2.3.2 Application and disposition. Where required, a request to use an alternative material, design or method of construction shall be submitted in writing to the building official for approval. Where the alternative material, design or method of construction is not approved, the building official shall respond in writing, stating the reasons the alternative was not approved.

[A] 104.2.3.3 Compliance with code intent. An alternative material, design or method of construction shall comply with the intent of the provisions of this code.

[A] 104.2.3.4 Equivalency criteria. An alternative material, design or method of construction shall, for the purpose intended, be not less than the equivalent of that prescribed in this code with respect to all of the following, as applicable:

1. Quality.
2. Strength.
3. Effectiveness.
4. Durability.
5. Safety, other than fire safety.
6. Fire safety.

[A] 104.2.3.5 Tests. Tests conducted to demonstrate equivalency in support of an alternative material, design or method of construction application shall be of a scale that is sufficient to predict performance of the end use configuration. Tests shall be performed by a party acceptable to the building official.

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[A] 104.2.3.5.1 Fire Tests. Tests conducted to demonstrate equivalent fire safety in support of an alternative material, design or method of construction application shall be of a scale that is sufficient to predict fire safety performance of the end use configuration. Tests shall be performed by a party acceptable to the building official.

[A] 104.2.3.6 Reports. Supporting data, where necessary to assist in the approval of materials or assemblies not specifically provided for in this code, shall comply with Sections 104.2.3.6.1 and 104.2.3.6.2.

[A] 104.2.3.6.1 Evaluation reports. Evaluation reports shall be issued by an approved agency and use of the evaluation report shall require approval by the building official for the installation. The alternate material, design or method of construction and product evaluated shall be within the scope of the building official's recognition of the approved agency. Criteria used for the evaluation shall be identified within the report and, where required, provided to the building official.

[A] 104.2.3.6.2 Other reports. Reports not complying with Section 104.2.3.6.1 shall describe criteria, including but not limited to any referenced testing or analysis, used to determine compliance with code intent and justify code equivalence. The report shall be prepared by a qualified engineer, specialist, laboratory or specialty organization acceptable to the building official. The building official is authorized to require design submittals to be prepared by, and bear the stamp of, a registered design professional.

[A] 104.2.3.7 Peer review. The building official is authorized to require submittal of a peer review report in conjunction with a request to use an alternative material, design or method of construction, prepared by a peer reviewer that is approved by the building official.

[OSHPD 1, 1R, 2, 4 & 5] *When peer review is required for new or existing buildings, it shall be performed in accordance with Section 1617A.1.41.*

104.2.3.8 Earthquake monitoring instruments. [OSHPD 1 & 4] *The enforcement agency shall be permitted to require earthquake monitoring instruments for any building that receives approval of an alternative system for the Lateral Force Resisting System (LFRS). There shall be a sufficient number of instruments to characterize the response of the building during an earthquake and shall include at least one tri-axial free field instrument or equivalent. A proposal for instrumentation and equipment specifications shall be forwarded to the enforcement agency for review and approval.*

The instruments shall be interconnected for common start and common timing. Each instrument shall be located so that access is maintained at all times and is unobstructed by room contents. A sign stating "MAINTAIN CLEAR ACCESS TO THIS INSTRUMENT" shall be posted in a conspicuous location.

The Owner of the building shall be responsible for the implementation of the instrumentation program. Maintenance and service of the instruments shall be in accordance with Section L101.3 of this code.

[A] 104.2.4 Modifications. Where there are practical difficulties involved in carrying out the provisions of this code, the building official shall have the authority to grant modifications for individual cases, provided that the building official shall first find that one or more special individual reasons make the strict letter of this code impractical, and that the modification is in compliance with the intent and purpose of this code and that such modification does not lessen health, accessibility, life and fire safety or structural requirements. The details of the written request for and action granting modifications shall be recorded and entered in the files of the department of building safety.

[A] 104.2.4.1 Flood hazard areas. The building official shall not grant modifications to any provision required in flood hazard areas as established by Section 1612.3 unless a determination has been made that:

1. A showing of good and sufficient cause that the unique characteristics of the size, configuration or topography of the site render the elevation standards of Section 1612 inappropriate.
2. A determination that failure to grant the variance would result in exceptional hardship by rendering the lot undevelopable.
3. A determination that the granting of a variance will not result in increased flood heights, additional threats to public safety or extraordinary public expense; cause fraud on or victimization of the public; or conflict with existing laws or ordinances.
4. A determination that the variance is the minimum necessary to afford relief, considering the flood hazard.
5. Submission to the applicant of written notice specifying the difference between the design flood elevation and the elevation to which the building is to be built, stating that the cost of flood insurance will be commensurate with the increased risk resulting from the reduced floor elevation, and stating that construction below the design flood elevation increases risks to life and property.

[A] 104.3 Applications and permits. The building official shall receive applications, review construction documents, issue permits, inspect the premises for which such permits have been issued and enforce compliance with the provisions of this code.

[A] 104.3.1 Determination of substantially improved or substantially damaged existing buildings and structures in flood hazard areas. For applications for reconstruction, rehabilitation, repair, alteration, addition or other improvement of existing buildings or structures located in flood hazard areas, the building official shall determine if the proposed work constitutes substantial improvement or repair of substantial damage. Where the building official determines that the proposed work constitutes substantial improvement or repair of substantial damage, and where required by this code, the building official shall require the building to meet the requirements of Section 1612, or Section R306 of the *California Residential Code*, as applicable.

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[A] 104.4 Right of entry. Where it is necessary to make an inspection to enforce the provisions of this code, or where the building official has reasonable cause to believe that there exists in a structure or on a premises a condition that is contrary to or in violation of this code that makes the structure or premises unsafe, dangerous or hazardous, the building official is authorized to enter the structure or premises at all reasonable times to inspect or to perform the duties imposed by this code. If such structure or premises is occupied, the building official shall present credentials to the occupant and request entry. If such structure or premises is unoccupied, the building official shall first make a reasonable effort to locate the owner, the owner's authorized agent or other person having charge or control of the structure or premises and request entry. If entry is refused, the building official shall have recourse to every remedy provided by law to secure entry.

[A] 104.4.1 Warrant. Where the building official has first obtained a proper inspection warrant or other remedy provided by law to secure entry, an owner, the owner's authorized agent, occupant or person having charge, care or control of the structure or premises shall not fail or neglect, after a proper request is made as herein provided, to permit entry therein by the building official for the purposes of inspection and examination pursuant to this code.

[A] 104.5 Identification. The building official shall carry proper identification when inspecting structures or premises in the performance of duties under this code.

[A] 104.6 Notices and orders. The building official shall issue necessary notices or orders to ensure compliance with this code. Notices of violations shall be in accordance with Section 114.

[A] 104.7 Official records. The building official shall keep official records as required by Sections 104.7.1 through 104.7.5. Such official records shall be retained for not less than 5 years or for as long as the building or structure to which such records relate remains in existence, unless otherwise provided by other regulations.

[A] 104.7.1 Approvals. A record of approvals shall be maintained by the building official and shall be available for public inspection during business hours in accordance with applicable laws.

[A] 104.7.2 Inspections. The building official shall keep a record of each inspection made, including notices and orders issued, showing the findings and disposition of each.

[A] 104.7.3 Code alternatives and modifications. Application for alternative materials, design and methods of construction and equipment in accordance with Section 104.2.3; modifications in accordance with Section 104.2.4; and documentation of the final decision of the building official for either shall be in writing and shall be retained in the official records.

[A] 104.7.4 Tests. The building official shall keep a record of tests conducted to comply with Sections 104.2.2.4 and 104.2.3.5.

[A] 104.7.5 Fees. The building official shall keep a record of fees collected and refunded in accordance with Section 109.

[A] 104.8 Liability. The building official, member of the board of appeals or employee charged with the enforcement of this code, while acting for the jurisdiction in good faith and without malice in the discharge of the duties required by this code or other pertinent law or ordinance, shall not thereby be rendered personally liable, either civilly or criminally, and is hereby relieved from personal liability for any damage accruing to persons or property as a result of any act or by reason of any act or omission in the discharge of official duties.

[A] 104.8.1 Legal defense. Any suit or criminal complaint instituted against any officer or employee because of an act performed by that officer or employee in the lawful discharge of duties under the provisions of this code or other laws or ordinances implemented through the enforcement of this code shall be defended by legal representatives of the jurisdiction until the final termination of the proceedings. The building official or any subordinate shall not be liable for costs in an action, suit or proceeding that is instituted in pursuance of the provisions of this code.

[A] 104.9 Approved materials and equipment. Materials, equipment and devices approved by the building official shall be constructed and installed in accordance with such approval.

[A] 104.9.1 Materials and equipment reuse. Materials, equipment and devices shall not be reused unless such elements are in good working condition and approved.

SECTION 105—PERMITS

[A] 105.1 Required. Any owner or owner's authorized agent who intends to construct, enlarge, alter, repair, move, demolish or change the occupancy of a building or structure, or to erect, install, enlarge, alter, repair, remove, convert or replace any electrical, gas, mechanical or plumbing system, the installation of which is regulated by this code, or to cause any such work to be performed, shall first make application to the building official and obtain the required permit.

[A] 105.1.1 Annual permit. Instead of an individual permit for each alteration to an already approved electrical, gas, mechanical or plumbing installation, the building official is authorized to issue an annual permit upon application therefor to any person, firm or corporation regularly employing one or more qualified tradespersons in the building, structure or on the premises owned or operated by the applicant for the permit.

[A] 105.1.2 Annual permit records. The person to whom an annual permit is issued shall keep a detailed record of alterations made under such annual permit. The building official shall have access to such records at all times or such records shall be filed with the building official as designated.

[A] 105.2 Work exempt from permit. Exemptions from permit requirements of this code shall not be deemed to grant authorization for any work to be done in any manner in violation of the provisions of this code or any other laws or ordinances of this jurisdiction. Permits shall not be required for the following:

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Building:

1. One-story detached accessory structures used as tool and storage sheds, playhouses and similar uses, provided that the floor area *does* not *exceed* than 120 square feet (11.15 m^2). *It is permissible that these structures still be regulated by Part 7, California Wildland-Urban Interface Code, despite exemption from permit.*
2. Fences, other than swimming pool barriers, not over 7 feet (2134 mm) high.
3. Oil derricks.
4. Retaining walls that are not over 4 feet (1219 mm) in height measured from the bottom of the footing to the top of the wall, unless supporting a surcharge or impounding Class I, II or IIIA liquids.
5. Water tanks supported directly on grade if the capacity is not greater than 5,000 gallons (18 925 L) and the ratio of height to diameter or width is not greater than 2:1.
6. Sidewalks and driveways not more than 30 inches (762 mm) above adjacent grade, and not over any basement or story below and are not part of an accessible route.
7. Painting, papering, tiling, carpeting, cabinets, countertops and similar finish work.
8. Temporary motion picture, television and theater stage sets and scenery.
9. Prefabricated swimming pools accessory to a Group R-3 occupancy that are less than 24 inches (610 mm) deep, are not greater than 5,000 gallons (18 925 L) and are installed entirely above ground.
10. Shade cloth structures constructed for nursery or agricultural purposes, not including service systems.
11. Swings and other playground equipment accessory to detached one- and two-family dwellings.
12. Window awnings in Group R-3 and U occupancies, supported by an exterior wall that do not project more than 54 inches (1372 mm) from the exterior wall and do not require additional support.
13. Nonfixed and movable fixtures, cases, racks, counters and partitions not over 5 feet 9 inches (1753 mm) in height.

Electrical:

1. **Repairs and maintenance:** Minor repair work, including the replacement of lamps or the connection of approved portable electrical equipment to approved permanently installed receptacles.
2. **Radio and television transmitting stations:** The provisions of this code shall not apply to electrical equipment used for radio and television transmissions, but do apply to equipment and wiring for a power supply and the installations of towers and antennas.
3. **Temporary testing systems:** A permit shall not be required for the installation of any temporary system required for the testing or servicing of electrical equipment or apparatus.

Gas:

1. Portable heating appliance.
2. Replacement of any minor part that does not alter approval of equipment or make such equipment unsafe.

Mechanical:

1. Portable heating appliance.
2. Portable ventilation equipment.
3. Portable cooling unit.
4. Steam, hot or chilled water piping within any heating or cooling equipment regulated by this code.
5. Replacement of any part that does not alter its approval or make it unsafe.
6. Portable evaporative cooler.
7. Self-contained refrigeration system containing 10 pounds (4.54 kg) or less of refrigerant and actuated by motors of 1 horsepower (0.75 kW) or less.

Plumbing:

1. The stopping of leaks in drains, water, soil, waste or vent pipe, provided, however, that if any concealed trap, drain pipe, water, soil, waste or vent pipe becomes defective and it becomes necessary to remove and replace the same with new material, such work shall be considered as new work and a permit shall be obtained and inspection made as provided in this code.
2. The clearing of stoppages or the repairing of leaks in pipes, valves or fixtures and the removal and reinstallation of water closets, provided that such repairs do not involve or require the replacement or rearrangement of valves, pipes or fixtures.

[A] 105.2.1 Emergency repairs. Where equipment replacements and repairs must be performed in an emergency situation, the permit application shall be submitted within the next working business day to the building official.

[A] 105.2.2 Public service agencies. A permit shall not be required for the installation, alteration or repair of generation, transmission, distribution or metering or other related equipment that is under the ownership and control of public service agencies by established right.

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[A] 105.3 Application for permit. To obtain a permit, the applicant shall first file an application therefor in writing on a form furnished by the department of building safety for that purpose. Such application shall:

1. Identify and describe the work to be covered by the permit for which application is made.
2. Describe the land on which the proposed work is to be done by legal description, street address or similar description that will readily identify and definitely locate the proposed building or work.
3. Indicate the use and occupancy for which the proposed work is intended.
4. Be accompanied by construction documents and other information as required in Section 107.
5. State the valuation of the proposed work.
6. Be signed by the applicant, or the applicant's authorized agent.
7. Give such other data and information as required by the building official.

[A] 105.3.1 Action on application. The building official shall examine or cause to be examined applications for permits and amendments thereto within a reasonable time after filing. If the application or the construction documents do not conform to the requirements of pertinent laws, the building official shall reject such application in writing, stating the reasons therefor. If the building official is satisfied that the proposed work conforms to the requirements of this code and laws and ordinances applicable thereto, the building official shall issue a permit therefor as soon as practicable.

[A] 105.3.2 Time limitation of application. An application for a permit for any proposed work shall be deemed to have been abandoned 180 days after the date of filing, unless such application has been pursued in good faith or a permit has been issued; except that the building official is authorized to grant one or more extensions of time for additional periods not exceeding 90 days each. The extension shall be requested in writing and justifiable cause demonstrated. ***[OSHPD 1, 1R, 2, 4 & 5]*** *Time limitation shall be in accordance with the California Administrative Code, Chapter 7, Section 7-129.*

[A] 105.4 Validity of permit. The issuance or granting of a permit shall not be construed to be a permit for, or an approval of, any violation of any of the provisions of this code or of any other ordinance of the jurisdiction. Permits presuming to give authority to violate or cancel the provisions of this code or other ordinances of the jurisdiction shall not be valid. The issuance of a permit based on construction documents and other data shall not prevent the building official from requiring the correction of errors in the construction documents and other data. The building official is authorized to prevent occupancy or use of a structure where in violation of this code or of any other ordinances of this jurisdiction.

[A] 105.5 Expiration. Every permit issued shall become invalid unless the work on the site authorized by such permit is commenced within 180 days after its issuance, or if the work authorized on the site by such permit is suspended or abandoned for a period of 180 days after the time the work is commenced. The building official is authorized to grant, in writing, one or more extensions of time, for periods not more than 180 days each. The extension shall be requested in writing and justifiable cause demonstrated.

105.5.1 Expiration. *On or after January 1, 2019, every permit issued shall become invalid unless the work on the site authorized by such permit is commenced within 12 months after its issuance, or if the work authorized on the site by such permit is suspended or abandoned for a period of 12 months after the time the work is commenced. The building official is authorized to grant, in writing, one or more extensions of time, for periods not more than 180 days each. The extension shall be requested in writing and justifiable cause demonstrated. (See Health and Safety Code Section 18938.5 and 18938.6.)*

[A] 105.6 Suspension or revocation. The building official is authorized to suspend or revoke a permit issued under the provisions of this code wherever the permit is issued in error or on the basis of incorrect, inaccurate or incomplete information, or in violation of any ordinance or regulation or any of the provisions of this code.

[A] 105.7 Placement of permit. The building permit or copy shall be kept on the site of the work until the completion of the project.

SECTION 106—FLOOR AND ROOF DESIGN LOADS

[A] 106.1 Live loads posted. In commercial or industrial buildings, for each floor or portion thereof designed for live loads exceeding 50 psf (2.40 kN/m^2), such design live loads shall be conspicuously posted by the owner or the owner's authorized agent in that part of each story in which they apply, using durable signs. It shall be unlawful to remove or deface such notices. ***[DSA-SS, DSA-SS/CC]*** *These posting requirements also apply to school and state-owned essential services buildings as regulated by DSA.*

106.1.1 Snow load posting. [OSHPD 1, 1R, 2, 4 & 5] *Snow loads used in design shall be posted as for live loads.*

106.1.2 Snow load posting. [DSA-SS, DSA-SS/CC] *When design snow loads at exterior balconies, decks and other elevated walking surfaces exceed 50 psf, the design snow loads shall be posted as for live loads. When design roof (not ground) snow loads exceed 20 psf, the roof design snow loads for each roof level of the building shall similarly be conspicuously posted with signs stating the maximum design roof snow loads.*

[A] 106.2 Issuance of certificate of occupancy. A certificate of occupancy required by Section 111 shall not be issued until the floor load signs, required by Section 106.1, have been installed.

[A] 106.3 Restrictions on loading. It shall be unlawful to place, or cause or permit to be placed, on any floor or roof of a building, structure or portion thereof, a load greater than is permitted by this code.

SECTION 107—CONSTRUCTION DOCUMENTS

[A] 107.1 General. Submittal documents consisting of construction documents, statement of special inspections, geotechnical report and other data shall be submitted in two or more sets, or in a digital format where allowed by the building official, with each

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permit application. The construction documents shall be prepared by a registered design professional where required by the statutes of the jurisdiction in which the project is to be constructed. Where special conditions exist, the building official is authorized to require additional construction documents to be prepared by a registered design professional.

Exception: The building official is authorized to waive the submission of construction documents and other data not required to be prepared by a registered design professional if it is found that the nature of the work applied for is such that review of construction documents is not necessary to obtain compliance with this code.

[A] 107.2 Construction documents. Construction documents shall be in accordance with Sections 107.2.1 through 107.2.8.

[A] 107.2.1 Information on construction documents. Construction documents shall be dimensioned and drawn on suitable material. Electronic media documents are permitted to be submitted where approved by the building official. Construction documents shall be of sufficient clarity to indicate the location, nature and extent of the work proposed and show in detail that it will conform to the provisions of this code and relevant laws, ordinances, rules and regulations, as determined by the building official.

[A] 107.2.2 Fire protection system shop drawings. Shop drawings for the fire protection systems shall be submitted to indicate conformance to this code and the construction documents and shall be approved prior to the start of system installation. Shop drawings shall contain all information as required by the referenced installation standards in Chapter 9.

[A] 107.2.3 Means of egress. The construction documents shall show in sufficient detail the location, construction, size and character of all portions of the means of egress including the path of the exit discharge to the public way in compliance with the provisions of this code. In other than occupancies in Groups R-2, *R-2.1 and* R-3, the construction documents shall designate the number of occupants to be accommodated on every floor, and in all rooms and spaces.

[A] 107.2.4 Exterior wall envelope. Construction documents for all buildings shall describe the exterior wall assembly in sufficient detail to determine compliance with this code. The construction documents shall provide details of the exterior wall assembly as required, including flashing, intersections with dissimilar materials, corners, end details, control joints, intersections at roof, eaves or parapets, means of drainage, water-resistive barrier and details around openings.

The construction documents shall include manufacturer's installation instructions that provide supporting documentation that the proposed penetration and opening details described in the construction documents maintain the weather resistance of the exterior wall assembly. The supporting documentation shall fully describe the exterior wall assembly that was tested, where applicable, as well as the test procedure used.

[A] 107.2.5 Exterior balconies and elevated walking surfaces. Where balconies or other elevated walking surfaces have weather-exposed surfaces, and the structural framing is protected by an impervious moisture barrier, the construction documents shall include details for all elements of the impervious moisture barrier system. The construction documents shall include manufacturer's installation instructions.

[A] 107.2.6 Site plan. The construction documents submitted with the application for permit shall be accompanied by a site plan showing to scale the size and location of new construction and existing structures on the site, distances from lot lines, the established street grades and the proposed finished grades and, as applicable, flood hazard areas, floodways, and design flood elevations; and it shall be drawn in accordance with an accurate boundary line survey. In the case of demolition, the site plan shall show construction to be demolished and the location and size of existing structures and construction that are to remain on the site or plot. The building official is authorized to waive or modify the requirement for a site plan where the application for permit is for alteration or repair or where otherwise warranted.

[A] 107.2.6.1 Design flood elevations. Where design flood elevations are not specified, they shall be established in accordance with Section 1612.3.1.

[A] 107.2.7 Structural information. The construction documents shall provide the information specified in Section 1603.

[A] 107.2.8 Relocatable buildings. Construction documents for relocatable buildings shall comply with Section 3113.

[A] 107.3 Examination of documents. The building official shall examine or cause to be examined the accompanying submittal documents and shall ascertain by such examinations whether the construction indicated and described is in accordance with the requirements of this code and other pertinent laws or ordinances.

[A] 107.3.1 Approval of construction documents. When the building official issues a permit, the construction documents shall be approved, in writing or by stamp, as "Reviewed for Code Compliance." One set of construction documents so reviewed shall be retained by the building official. The other set shall be returned to the applicant, shall be kept at the site of work and shall be open to inspection by the building official or a duly authorized representative.

[A] 107.3.2 Previous approvals. This code shall not require changes in the construction documents, construction or designated occupancy of a structure for which a lawful permit has been heretofore issued or otherwise lawfully authorized, and the construction of which has been pursued in good faith within 180 days after the effective date of this code and has not been abandoned.

[A] 107.3.3 Phased approval. The building official is authorized to issue a permit for the construction of foundations or any other part of a building or structure before the construction documents for the whole building or structure have been submitted, provided that adequate information and detailed statements have been filed complying with pertinent requirements of this code. The holder of such permit for the foundation or other parts of a building or structure shall proceed at the holder's own risk with the building operation and without assurance that a permit for the entire structure will be granted.

[A] 107.3.4 Design professional in responsible charge. Where it is required that documents be prepared by a registered design professional, the building official shall be authorized to require the owner or the owner's authorized agent to engage and desig-

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nate on the building permit application a registered design professional who shall act as the registered design professional in responsible charge. If the circumstances require, the owner or the owner's authorized agent shall designate a substitute registered design professional in responsible charge who shall perform the duties required of the original registered design professional in responsible charge. The building official shall be notified in writing by the owner or the owner's authorized agent if the registered design professional in responsible charge is changed or is unable to continue to perform the duties.

The registered design professional in responsible charge shall be responsible for reviewing and coordinating submittal documents prepared by others, including phased and deferred submittal items, for compatibility with the design of the building.

[A] 107.3.4.1 Deferred submittals. Deferral of any submittal items shall have the prior approval of the building official. The registered design professional in responsible charge shall list the deferred submittals on the construction documents for review by the building official.

Documents for deferred submittal items shall be submitted to the registered design professional in responsible charge who shall review them and forward them to the building official with a notation indicating that the deferred submittal documents have been reviewed and found to be in general conformance to the design of the building. The deferred submittal items shall not be installed until the deferred submittal documents have been approved by the building official. ***[OSHPD 1, 1R, 2, 4 & 5]*** *Deferred submittals shall be in accordance with the California Administrative Code, Chapter 7, Section 7-126.*

[A] 107.4 Amended construction documents. Work shall be installed in accordance with the approved construction documents, and any changes made during construction that are not in compliance with the approved construction documents shall be resubmitted for approval as an amended set of construction documents.

[A] 107.5 Retention of construction documents. One set of approved construction documents shall be retained by the building official for a period of not less than 180 days from date of completion of the permitted work, or as required by state or local laws.

SECTION 108—TEMPORARY STRUCTURES, EQUIPMENT AND SYSTEMS

[A] 108.1 General. The building official is authorized to issue a permit for temporary structures, equipment or systems. Such permits shall be limited as to time of service, but shall not be permitted for more than 180 days. The building official is authorized to grant extensions for demonstrated cause. Structures designed to comply with Section 3103.6 shall not be in service for a period of more than 1 year unless an extension of time is granted. ***[OSHPD 1, 1R, 2, 4 & 5]*** *OSHPD shall grant only one extension when cause is demonstrated.*

[A] 108.2 Conformance. Temporary structures shall comply with the requirements in Section 3103.

[A] 108.3 Temporary service utilities. The building official is authorized to give permission to temporarily supply service utilities in accordance with Section 112.

[A] 108.4 Termination of approval. The building official is authorized to terminate such permit for a temporary structure, equipment or system and to order the same to be discontinued.

SECTION 109—FEES

[A] 109.1 Payment of fees. A permit shall not be valid until the fees prescribed by law have been paid, nor shall an amendment to a permit be released until the additional fee, if any, has been paid.

[A] 109.2 Schedule of permit fees. Where a permit is required, a fee for each permit shall be paid as required, in accordance with the schedule as established by the applicable governing authority.

[A] 109.3 Permit valuations. The applicant for a permit shall provide an estimated value of the work for which the permit is being issued at time of application. Such estimated valuations shall include the total value of work, including materials and labor, for which the permit is being issued, such as electrical, gas, mechanical, plumbing equipment and permanent systems. Where, in the opinion of the building official, the valuation is underestimated, the permit shall be denied, unless the applicant can show detailed estimates acceptable to the building official. The building official shall have the authority to adjust the final valuation for permit fees.

[A] 109.4 Work commencing before permit issuance. Any person who commences any work before obtaining the necessary permits shall be subject to a fee established by the building official that shall be in addition to the required permit fees.

[A] 109.5 Related fees. The payment of the fee for the construction, alteration, removal or demolition for work done in connection to or concurrently with the work authorized by a building permit shall not relieve the applicant or holder of the permit from the payment of other fees that are prescribed by law.

[A] 109.6 Refunds. The building official is authorized to establish a refund policy.

SECTION 110—INSPECTIONS

[A] 110.1 General. Construction or work for which a permit is required shall be subject to inspection by the building official and such construction or work shall remain visible and able to be accessed for inspection purposes until approved. Approval as a result of an inspection shall not be construed to be an approval of a violation of the provisions of this code or of other ordinances of the jurisdiction. Inspections presuming to give authority to violate or cancel the provisions of this code or of other ordinances of the jurisdiction shall not be valid. It shall be the duty of the owner or the owner's authorized agent to cause the work to remain visible and able to be accessed for inspection purposes. Neither the building official nor the jurisdiction shall be liable for expense entailed in the removal or replacement of any material required to allow inspection.

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[A] 110.2 Preliminary inspection. Before issuing a permit, the building official is authorized to examine or cause to be examined buildings, structures and sites for which an application has been filed.

[A] 110.3 Required inspections. The building official, upon notification, shall make the inspections set forth in Sections 110.3.1 through 110.3.12.

[A] 110.3.1 Footing and foundation inspection. Footing and foundation inspections shall be made after excavations for footings are complete and any required reinforcing steel is in place. For concrete foundations, any required forms shall be in place prior to inspection. Materials for the foundation shall be on the job, except where concrete is ready mixed in accordance with ASTM C94, the concrete need not be on the job.

[A] 110.3.2 Concrete slab and under-floor inspection. Concrete slab and under-floor inspections shall be made after in-slab or under-floor reinforcing steel and building service equipment, conduit, piping accessories and other ancillary equipment items are in place, but before any concrete is placed or floor sheathing installed, including the subfloor.

[A] 110.3.3 Lowest floor elevation. In flood hazard areas, upon placement of the lowest floor, including the basement, and prior to further vertical construction, the elevation certification required in Section 1612.4 or the *California Residential Code*, as applicable, shall be submitted to the building official.

[A] 110.3.4 Frame inspection. Framing inspections shall be made after the roof deck or sheathing, all framing, fire-blocking and bracing are in place and pipes, chimneys and vents to be concealed are complete and the rough electrical, plumbing, heating wires, pipes and ducts are approved.

110.3.4.1 [HCD 1] Moisture content verification. *Moisture content of framing members shall be verified in accordance with the California Green Building Standards Code (CALGreen), Chapter 4, Division 4.5.*

[A] 110.3.5 Types IV-A, IV-B and IV-C connection protection inspection. In buildings of Types IV-A, IV-B and IV-C construction, where connection fire-resistance ratings are provided by wood cover calculated to meet the requirements of Section 2304.10.1, inspection of the wood cover shall be made after the cover is installed, but before any other coverings or finishes are installed.

[A] 110.3.6 Lath and gypsum panel product inspection. Lath and gypsum panel product inspections shall be made after lathing and gypsum panel products, interior and exterior, are in place, but before any plastering is applied or gypsum panel product joints and fasteners are taped and finished.

Exception: Gypsum panel products that are not part of a fire-resistance-rated assembly or a shear assembly.

[A] 110.3.7 Weather-exposed balcony and walking surface waterproofing. Where balconies or other elevated walking surfaces have weather-exposed surfaces, and the structural framing is protected by an impervious moisture barrier, all elements of the impervious moisture barrier system shall not be concealed until inspected and approved.

Exception: Where special inspections are provided in accordance with Section 1705.1.1, Item 3.

[A] 110.3.8 Fire- and smoke-resistant penetrations. Protection of joints and penetrations in fire-resistance-rated assemblies, smoke barriers and smoke partitions shall not be concealed from view until inspected and approved.

[A] 110.3.9 Energy efficiency inspections. Inspections shall be made to determine compliance with Chapter 13 and shall include, but not be limited to, inspections for: building thermal envelope insulation R- and U-values, fenestration U-value, duct system R-value, and HVAC and water-heating equipment efficiency.

[A] 110.3.10 Other inspections. In addition to the inspections specified in Sections 110.3.1 through 110.3.9, the building official is authorized to make or require other inspections of any construction work to ascertain compliance with the provisions of this code and other laws that are enforced by the department of building safety.

[A] 110.3.11 Special inspections. For special inspections, see Chapter 17.

[A] 110.3.12 Final inspection. The final inspection shall be made after all work required by the building permit is completed.

[A] 110.3.12.1 Flood hazard documentation. If located in a flood hazard area, documentation of the elevation of the lowest floor or the elevation of dry floodproofing, if applicable, as required in Section 1612.4 shall be submitted to the building official prior to the final inspection.

110.3.12.2 [HCD 1] Operation and maintenance manual. *At the time of final inspection, a manual, compact disc, web-based reference or other media acceptable to the enforcing agency shall be placed in the building in accordance with the California Green Building Standards Code (CALGreen), Chapter 4, Division 4.4.*

[A] 110.4 Inspection agencies. The building official is authorized to accept reports of approved inspection agencies, provided that such agencies satisfy the requirements as to qualifications and reliability.

[A] 110.5 Inspection requests. It shall be the duty of the holder of the building permit or their duly authorized agent to notify the building official when work is ready for inspection. It shall be the duty of the permit holder to provide access to and means for inspections of such work that are required by this code.

[A] 110.6 Approval required. Work shall not be done beyond the point indicated in each successive inspection without first obtaining the approval of the building official. The building official, upon notification, shall make the requested inspections and shall either indicate the portion of the construction that is satisfactory as completed, or notify the permit holder or the permit holder's agent wherein the same fails to comply with this code. Any portions that do not comply shall be corrected and such portion shall not be covered or concealed until authorized by the building official.

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SECTION 111—CERTIFICATE OF OCCUPANCY

[A] 111.1 Change of occupancy. A building or structure shall not be used or occupied in whole or in part, and a change of occupancy of a building or structure or portion thereof shall not be made, until the building official has issued a certificate of occupancy therefor as provided herein. Issuance of a certificate of occupancy shall not be construed as an approval of a violation of the provisions of this code or of other ordinances of the jurisdiction. Certificates presuming to give authority to violate or cancel the provisions of this code or other ordinances of the jurisdiction shall not be valid.

Exception: Certificates of occupancy are not required for work exempt from permits in accordance with Section 105.2.

[A] 111.2 Certificate issued. After the building official inspects the building or structure and does not find violations of the provisions of this code or other laws that are enforced by the department, the building official shall issue a certificate of occupancy that contains the following:

1. The permit number.
2. The address of the structure.
3. The name and address of the owner or the owner's authorized agent.
4. A description of that portion of the structure for which the certificate is issued.
5. A statement that the described portion of the structure has been inspected for compliance with the requirements of this code.
6. The name of the building official.
7. The edition of the code under which the permit was issued.
8. The use and occupancy, in accordance with the provisions of Chapter 3.
9. The type of construction as defined in Chapter 6.
10. The design occupant load.
11. Where an automatic sprinkler system is provided, whether the sprinkler system is required.
12. Any special stipulations and conditions of the building permit.

[A] 111.3 Temporary occupancy. The building official is authorized to issue a temporary certificate of occupancy before the completion of the entire work covered by the permit, provided that such portion or portions shall be occupied safely. The building official shall set a time period during which the temporary certificate of occupancy is valid.

[A] 111.4 Revocation. The building official is authorized to suspend or revoke a certificate of occupancy or completion issued under the provisions of this code, in writing, wherever the certificate is issued in error, or on the basis of incorrect information supplied, or where it is determined that the building or structure or portion thereof is in violation of the provisions of this code or other ordinance of the jurisdiction.

SECTION 112—SERVICE UTILITIES

[A] 112.1 Connection of service utilities. A person shall not make connections from a utility, a source of energy, fuel, or power, or a water system or sewer system to any building or system that is regulated by this code for which a permit is required, until approved by the building official.

[A] 112.2 Temporary connection. The building official shall have the authority to authorize the temporary connection of the building or system to the utility, the source of energy, fuel, or power, or the water system or sewer system for the purpose of testing systems or for use under a temporary approval.

[A] 112.3 Authority to disconnect service utilities. The building official shall have the authority to authorize disconnection of utility service to the building, structure or system regulated by this code and the referenced codes and standards in case of emergency where necessary to eliminate an immediate hazard to life or property or where such utility connection has been made without the approval required by Section 112.1 or 112.2. The building official shall notify the serving utility, and wherever possible the owner or the owner's authorized agent and occupant of the building, structure or service system of the decision to disconnect prior to taking such action. If not notified prior to disconnecting, the owner or the owner's authorized agent or occupant of the building, structure or service system shall be notified in writing, as soon as practical thereafter.

SECTION 113—MEANS OF APPEALS

[A] 113.1 General. In order to hear and decide appeals of orders, decisions or determinations made by the building official relative to the application and interpretation of this code, there shall be and is hereby created a board of appeals. The board of appeals shall be appointed by the applicable governing authority and shall hold office at its pleasure. The board shall adopt rules of procedure for conducting its business and shall render all decisions and findings in writing to the appellant with a duplicate copy to the building official.

[A] 113.2 Limitations on authority. An application for appeal shall be based on a claim that the true intent of this code or the rules legally adopted thereunder have been incorrectly interpreted, the provisions of this code do not fully apply or an equivalent or better form of construction is proposed. The board shall not have authority to waive requirements of this code.

[A] 113.3 Qualifications. The board of appeals shall consist of members who are qualified by experience and training on matters pertaining to the provisions of this code and who are not employees of the jurisdiction.

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[A] 113.4 Administration. The building official shall take action without delay in accordance with the decision of the board.

SECTION 114—VIOLATIONS

[A] 114.1 Unlawful acts. It shall be unlawful for any person, firm or corporation to erect, construct, alter, extend, repair, move, remove, demolish or occupy any building, structure or equipment regulated by this code, or cause same to be done, in conflict with or in violation of any of the provisions of this code.

[A] 114.2 Notice of violation. The building official is authorized to serve a notice of violation or order on the person responsible for the erection, construction, alteration, extension, repair, moving, removal, demolition or occupancy of a building or structure in violation of the provisions of this code, or in violation of a permit or certificate issued under the provisions of this code. Such order shall direct the discontinuance of the illegal action or condition and the abatement of the violation.

[A] 114.3 Prosecution of violation. If the notice of violation is not complied with promptly, the building official is authorized to request the legal counsel of the jurisdiction to institute the appropriate proceeding at law or in equity to restrain, correct or abate such violation, or to require the removal or termination of the unlawful occupancy of the building or structure in violation of the provisions of this code or of the order or direction made pursuant thereto.

[A] 114.4 Violation penalties. Any person who violates a provision of this code or fails to comply with any of the requirements thereof or who erects, constructs, alters or repairs a building or structure in violation of the approved construction documents or directive of the building official, or of a permit or certificate issued under the provisions of this code, shall be subject to penalties as prescribed by law.

SECTION 115—STOP WORK ORDER

[A] 115.1 Authority. Where the building official finds any work regulated by this code being performed in a manner contrary to the provisions of this code or in a dangerous or unsafe manner, the building official is authorized to issue a stop work order.

[A] 115.2 Issuance. The stop work order shall be in writing and shall be given to the owner of the property, the owner's authorized agent or the person performing the work. Upon issuance of a stop work order, the cited work shall immediately cease. The stop work order shall state the reason for the order and the conditions under which the cited work is authorized to resume.

[A] 115.3 Emergencies. Where an emergency exists, the building official shall not be required to give a written notice prior to stopping the work.

[A] 115.4 Failure to comply. Any person who shall continue any work after having been served with a stop work order, except such work as that person is directed to perform to remove a violation or unsafe condition, shall be subject to fines established by the authority having jurisdiction.

SECTION 116—UNSAFE STRUCTURES AND EQUIPMENT

[A] 116.1 Unsafe conditions. Structures or existing equipment that are or hereafter become unsafe, insanitary or deficient because of inadequate means of egress facilities, inadequate light and ventilation, or that constitute a fire hazard, or are otherwise dangerous to human life or the public welfare, or that involve illegal or improper occupancy or inadequate maintenance, shall be deemed an unsafe condition. Unsafe structures shall be taken down and removed or made safe, as the building official deems necessary and as provided for in this section. A vacant structure that is not secured against unauthorized entry shall be deemed unsafe.

[A] 116.2 Record. The building official shall cause a report to be filed on an unsafe condition. The report shall state the occupancy of the structure and the nature of the unsafe condition.

[A] 116.3 Notice. If an unsafe condition is found, the building official shall serve on the owner of the structure, or the owner's authorized agent, a written notice that describes the condition deemed unsafe and specifies the required repairs or improvements to be made to abate the unsafe condition, or that requires the unsafe structure to be demolished within a stipulated time. Such notice shall require the person thus notified to declare immediately to the building official acceptance or rejection of the terms of the order.

[A] 116.4 Method of service. Such notice shall be deemed properly served where a copy thereof is served in accordance with one of the following methods:

1. A copy is delivered to the owner personally.
2. A copy is sent by certified or registered mail addressed to the owner at the last known address with the return receipt requested.
3. A copy is delivered in any other manner as prescribed by local law.

If the certified or registered letter is returned showing that the letter was not delivered, a copy thereof shall be posted in a conspicuous place in or about the structure affected by such notice. Service of such notice in the foregoing manner on the owner's authorized agent shall constitute service of notice on the owner.

[A] 116.5 Restoration or abatement. Where the structure or equipment determined to be unsafe by the building official is restored to a safe condition, the owner, the owner's authorized agent, operator or occupant of a structure, premises or equipment deemed unsafe by the building official shall abate or cause to be abated or corrected such unsafe conditions either by repair, rehabilitation, demolition or other approved corrective action. To the extent that repairs, alterations or additions are made or a change of occupancy occurs during the restoration of the structure, such repairs, alterations, additions and change of occupancy shall comply with the requirements of the *California Existing Building Code*.

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CALIFORNIA BUILDING CODE – MATRIX ADOPTION TABLE
CHAPTER 2 – DEFINITIONS

(Matrix Adoption Tables are nonregulatory, intended only as an aid to the code user.
See Chapter 1 for state agency authority and building applications.)

Adopting agency	BSC	BSC-CG	SFM	HCD			DSA			OSHPD							BSCC	DPH	AGR	DWR	CEC	CA	SL	SLC
				1	2	1/AC	AC	SS	SS/CC	1	1R	2	3	4	5	6								
Adopt entire chapter	X															X								
Adopt entire chapter as amended (amended sections listed below)			X	X	X	X		X	X	X	X	X	X	X	X									
Adopt only those sections that are listed below							X										X	X						
Chapter / Section																								
201.3			X	X	X	X																		
201.4			X																					
202			X	X	X	X																		
Access Aisle							X																	
Accessibility				X	X	X	X																	
Accessibility Function Button							X																	
Accessible				X	X	X	X																	
Accessible Element							X																	
Accessible Means of Egress							X																	
Accessible Route				X	X	X	X																	
Accessible Space				X	X	X	X																	
Accessory Dwelling Unit				X	X																			
Active Earthquake Fault								X	X	X	X	X		X	X									
Active Equipment/Component								X	X	X	X	X		X	X									
Adaptable							X																	
Adaptable Dwelling Unit						X																		
Addition *(2nd paragraph only)*							X																	
Adjusted Construction Cost							X																	
Administrative Authority							X																	
Adult Changing Facility							X																	
Aged Home or Institution			X																					
Aisle *(Amendment only)*							X																	
Alteration							X																	
Alternative System										X	X	X		X	X									
Amusement Attraction							X																	
Amusement Ride							X																	
Amusement Ride Seat							X																	
ANSI							X																	
Approved *(with notes)*			X	X	X	X																		
Approved *(2nd paragraph only) (w/o notes)*							X																	
Approved Agency				X	X			X	X															
Approved Listing Agency				X	X																			
Approved Testing Agency				X	X		X			X	X	X		X	X									
Area of Refuge							X																	
Area of Sport Activity							X																	
Assembly Area							X																	
Assistive Device						X																		
Assistive Listening System (ALS)							X																	
Automatic Door				X	X	X	X																	
Automatic Teller Machine (ATM)							X																	
Auxiliary Area																		X						
Backwash																		X						
Base								X	X	X	X	X		X	X									

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CALIFORNIA BUILDING CODE – MATRIX ADOPTION TABLE
CHAPTER 2 – DEFINITIONS—continued

Adopting agency	BSC	BSC-CG	SFM	HCD			DSA			OSHPD							BSCC	DPH	AGR	DWR	CEC	CA	SL	SLC
				1	2	1/AC	AC	SS	SS/CC	1	1R	2	3	4	5	6								
Adopt entire chapter	X															X								
Adopt entire chapter as amended (amended sections listed below)			X	X	X	X		X	X	X	X	X	X	X	X									
Adopt only those sections that are listed below							X										X	X						
Chapter / Section																								
Bather																		X						
Bathroom						X	X																	
Bedridden Person			X																					
Blended Transition							X																	
Boarding Pier							X																	
Boat Launch Ramp							X																	
Boat Slip							X																	
Bottle-Filling Station							X																	
Building			X																					
Building *(with exception)*				X	X	X																		
Building (w/o notes)							X																	
Building Entrance on an Accessible Route						X																		
Building, Existing				X	X																			
Building Official							X																	
Care and Supervision			X																					
Carriage Unit						X																		
Catastrophically Injured			X																					
Catch Pool							X																	
CCR							X																	
CCDR			X																					
Cell			X																					
Cell Complex			X																					
Cell Tiers			X																					
Cellular Concrete				X	X																			
Central Control Building			X																					
Characters				X	X	X	X																	
Charter School			X																					
Child Care			X																					
Child-Care Center			X																					
Child or Children			X																					
Children's Use							X																	
Chronically Ill			X																					
Circulation Path							X																	
Clean Pool Water																		X						
Clear							X																	
Clear Floor Space						X	X																	
Clear Pool Water																		X						
Climate Zone																					X			
Clinic, Outpatient			X																					
Closed-Circuit Telephone							X																	
Commercial Facilities							X																	
Commercial Place of Public Amusement							X																	
Common Use				†	†	†	X																	
Common Use Areas			†			X																		
Community Care Facility			X																					

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CHAPTER 2 – DEFINITIONS—continued

Adopting agency	BSC	BSC-CG	SFM	HCD			DSA			OSHPD							BSCC	DPH	AGR	DWR	CEC	CA	SL	SLC
				1	2	1/AC	AC	SS	SS/CC	1	1R	2	3	4	5	6								
Adopt entire chapter	X															X								
Adopt entire chapter as amended (amended sections listed below)			X	X	X	X		X	X	X	X	X	X	X	X									
Adopt only those sections that are listed below							X										X	X						
Chapter / Section																								
Community Correctional Reentry Centers			X																					
Comply With							X																	
Concrete, *Cellular*				X	X																			
Congregate Living Health Facility (CLHF)			X																					
Congregate Residence			X			X																		
Control Room			X																					
Correctional Hospitals			X																					
Correctional Medical or Mental Health Housing Suite			X																					
Correctional Mental Health Facilities			X																					
Correctional Nursing Facilities			X																					
Correctional Treatment Centers			X																					
Corrosion Resistant																		X						
Courthouse Holding Facility			X																					
Courtroom Dock			X																					
Covered Multifamily Dwellings						X																		
Cross Slope						X	X																	
Curb Cut				X	X	X	X																	
Curb Ramp				X	X	X	X																	
Custody Station			X																					
Day-Care			X																					
Day-Care Home, Family			X																					
Day-Care Home, Large Family			X																					
Day-Care Home, Small Family			X																					
Day Room			X																					
Deck																		X						
Department				X	X																			
Designated Public Transportation							X																	
Destination-Oriented Elevator							X																	
Detached Single-Family Dwelling				X	X																			
Detectable Warning							X																	
Detention Elevator			X																					
Detention Program Suite			X																					
Detention Treatment Room			X																					
Detoxification Facilities			X																					
Directional Sign				X	X		X																	
Disability							X																	
Distance from Active Earthquake Fault								X	X	X	X	X		X	X									
District Agricultural Associations							X																	
Dormitory			X				X																	

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CALIFORNIA BUILDING CODE – MATRIX ADOPTION TABLE
CHAPTER 2 – DEFINITIONS—continued

Adopting agency	BSC	BSC-CG	SFM	HCD			DSA			OSHPD							BSCC	DPH	AGR	DWR	CEC	CA	SL	SLC
				1	2	1/AC	AC	SS	SS/CC	1	1R	2	3	4	5	6								
Adopt entire chapter	X															X								
Adopt entire chapter as amended (amended sections listed below)			X	X	X	X		X	X	X	X	X	X	X	X									
Adopt only those sections that are listed below							X										X	X						
Chapter / Section																								
Drain																		X						
Drive Aisle							X																	
Drive-up Electric Vehicle Charging Station							X																	
Driveway							X																	
Dwelling Unit						X																		
Dwelling Unit, Efficiency				†	†	†																		
Effective Particle Size																		X						
Efficiency Dwelling Unit				X																				
Electric Vehicle (EV)			X				X																	
Electric Vehicle (EV) Charger							X																	
Electric Vehicle Charging Space (EV Space)							X																	
Electric Vehicle Charging Station (EVCS)							X																	
Electric Vehicle (EV) Connector							X																	
Element							X																	
Elevated Play Component							X																	
Elevator, Passenger				X	X		X																	
Employee Work Area							X																	
Enforcement				X	X																			
Enforcement Agent								X	X	X	X	X		X	X									
Enforcing Agency			X	X	X		X			X	X	X	X	X	X			X						
Entrance				X	X	X	X																	
Equipment								X	X	X		X		X	X									
Countertop Equipment								X	X	X		X		X	X									
Essential Equipment								X	X	X		X		X	X									
Fixed Equipment								X	X	X		X		X	X									
Interim Equipment										X		X		X	X									
Mobile Equipment								X	X	X		X		X	X									
Movable Equipment								X	X	X		X		X	X									
Other Equipment								X	X	X		X		X	X									
Temporary Equipment										X		X		X	X									
Equipment Area																		X						
Equivalent Facilitation						X	X																	
Existing Building or Facility							X																	
Exit							X																	
Facility							X																	
Family				X																				
Fire Appliance			X																					
Fire-Retardant Treated Wood			X																					
Fire-Smoke Barrier			X																					
Fireworks			X																					
Flammable Gas			X																					
Freestanding Acute Psychiatric Building (APB)															X									

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CALIFORNIA BUILDING CODE – MATRIX ADOPTION TABLE
CHAPTER 2 – DEFINITIONS—continued

Adopting agency	BSC	BSC-CG	SFM	HCD			DSA			OSHPD							BSCC	DPH	AGR	DWR	CEC	CA	SL	SLC
				1	2	1/AC	AC	SS	SS/CC	1	1R	2	3	4	5	6								
Adopt entire chapter	X															X								
Adopt entire chapter as amended (amended sections listed below)			X	X	X	X		X	X	X	X	X	X	X	X									
Adopt only those sections that are listed below							X										X	X						
Chapter / Section																								
Freestanding Building or Structure										X	X	X		X	X									
Freestanding Skilled Nursing Building (SNB)												X												
Full-Time Care			X																					
Functional Area							X																	
Gangway							X																	
Gas Detection System			X																					
General Acute Care Building (GAC Building)										X														
Golf Car Passage							X																	
Grab Bar						X	X																	
Grade (Adjacent Ground Elevation)						X	X																	
Grade Break							X																	
Ground Floor						X	X																	
Ground Level Play Component							X																	
Group Home			X																					
Guard *(or Guardrail)*				X	X	X	X																	
Hall Call Console							X																	
Handrail							X																	
Handwashing Fixture										X		X	X	X	X									
Hazardous Substance			X																					
Health Care Provider							X																	
High-Rise Building			X																					
High-Rise Building Access			X																					
Historic Buildings							X																	
Holding Facility			X																					
Hospitals and Psychiatric Hospitals			X																					
Hotel or Motel				X	X																			
Housing at a Place of Education						X	X																	
Housing Pod			X																					
Housing Unit			X																					
If, If… Then							X																	
Incidental Structural Alterations, Additions or Repairs										X	X	X		X	X									
Infant			X																					
Inflatable Amusement Device			X																					
Inlet																		X						
Intake and Release Areas			X																					
Intended to be occupied as a Residence				†	†	†																		
International Symbol of Accessibility						X	X																	

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CALIFORNIA BUILDING CODE – MATRIX ADOPTION TABLE
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Adopting agency	BSC	BSC-CG	SFM	HCD			DSA			OSHPD							BSCC	DPH	AGR	DWR	CEC	CA	SL	SLC
				1	2	1/AC	AC	SS	SS/CC	1	1R	2	3	4	5	6								
Adopt entire chapter	X															X								
Adopt entire chapter as amended (amended sections listed below)			X	X	X	X		X	X	X	X	X	X	X	X									
Adopt only those sections that are listed below							X										X	X						
Chapter / Section																								
Irregular Structure								X	X	X	X	X		X	X									
Key Station							X																	
Kick Plate				X	X	X	X																	
Kitchen or Kitchenette							X																	
Labeled				X	X																			
Laboratory			X																					
Laboratory Suite			X																					
Ladder																		X						
Lavatory						X	X																	
Level Area						X																		
Licensing Agency										X	X	X	X	X	X									
Lift, Platform (Wheelchair)						X																		
Liquid Tight Floor			X																					
Listed			X	X	X																			
Listing Agency				X	X																			
Live/Work Unit				X																				
Lobby			X	X	X																			
Lodging House				X		X																		
Mail Boxes							X																	
Major Structural Alterations, Additions or Repairs										X	X	X		X	X									
Marked Crossing				X	X	X	X																	
May							X																	
Medical Pool																		X						
Mezzanine							X																	
Minor Structural Alteration, Additions or Repairs										X	X	X		X	X									
Monolithic										X	X	X	X	X	X									
Monolithic Ceiling										X	X	X	X	X	X									
Motel				X	X																			
Motion Picture and Television Production Studio Sound Stage, Approved Production Facilities and Production Locations			X																					
Multi-bedroom Housing Unit							X																	
Multilevel Assembly Seating				†	†	†																		
Multistory Dwelling Unit						X																		
Multistory Unit				†	†	†																		
Newly Constructed						X																		
NFPA							X																	
Non-General Acute Care Building (Non-GAC Building)											X													
Nonambulatory Persons			X																					
Noncombustible			X																					
Nonpatient-care Suite			X																					

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CHAPTER 2 – DEFINITIONS—continued

Adopting agency	BSC	BSC-CG	SFM	HCD			DSA			OSHPD							BSCC	DPH	AGR	DWR	CEC	CA	SL	SLC
				1	2	1/AC	AC	SS	SS/CC	1	1R	2	3	4	5	6								
Adopt entire chapter	X															X								
Adopt entire chapter as amended (amended sections listed below)			X	X	X	X		X	X	X	X	X	X	X	X									
Adopt only those sections that are listed below							X										X	X						
Chapter / Section																								
Normal				X	X																			
Nosing							X																	
NPC 1, NPC 2, NPC 3/NPC 3R, NPC 4, NPC-4D and NPC 5										X														
Nursing Homes			X																					
Occupant Load							X																	
Occupiable Space							X																	
Off-Site Construction										X	X	X		X	X									
Open Riser				X	X	X	X																	
Operable Part				X	X	X	X																	
Organized Camps			X																					
Overflow System																		X						
Passage Door						X																		
Passenger Elevator				X	X		X																	
Passive Solar Energy Collector				X	X																			
Path of Travel							X																	
Pedestrian						X	X																	
Pedestrian Way				X	X	X	X																	
Peer Review										X	X	X		X	X									
Permanent							X																	
Permanent Portable Building			X																					
Permit							X																	
Persons with Disabilities						X																		
Persons with Intellectual Disabilities, Profoundly or Severely			X																					
Pictogram				X	X	X	X																	
Place of Public Accommodation				X	X	X	X																	
Platform							X																	
Platform (Wheelchair) Lift				X	X	X	X																	
Play Area							X																	
Play Component							X																	
Point-of-Sale Device							X																	
Pool																		X						
Pool User																		X						
Pool Volume																		X						
Powder Room				X	X	X	X																	
Power-Assisted Door							X																	
Primary Entry						X																		
Primary-Entry Level						X																		
Private Building or Facility							X																	
Private Pool																		X						
Professional Office of a Health Care Provider							X																	
Project Inspector								X	X															
Protective Social Care Facility			X																					
Public Building or Facility							X																	

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CALIFORNIA BUILDING CODE – MATRIX ADOPTION TABLE
CHAPTER 2 – DEFINITIONS—continued

Adopting agency	BSC	BSC-CG	SFM	HCD			DSA			OSHPD							BSCC	DPH	AGR	DWR	CEC	CA	SL	SLC
				1	2	1/AC	AC	SS	SS/CC	1	1R	2	3	4	5	6								
Adopt entire chapter	**X**															**X**								
Adopt entire chapter as amended (amended sections listed below)			**X**	**X**	**X**	**X**		**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**									
Adopt only those sections that are listed below							**X**										**X**	**X**						
Chapter / Section																								
Public Entity						X	X																	
Public Entrance							X																	
Public Housing						X	X																	
Public-Occupancy Temporary Structure								X	X															
Public Pool																		X						
Public Use							X																	
Public Use Areas						X																		
Public-Use Areas							X																	
Public Way							X																	
Qualified Historic Building or Facility							X																	
Quality Assurance (QA)								X	X	X	X	X		X	X									
Quality Control (QC)								X	X	X	X	X		X	X									
Ramp							X																	
Reasonable Portion							X																	
Recessed Steps																		X						
Recessed Treads																		X						
Recirculation System																		X						
Recommend				X	X		X																	
Relocatable Building (Public School)			X					X	X															
Remodeling							X																	
Removed from Acute Care Service											X													
Repair							X																	
Residential Care Facility for the Chronically Ill (RCF/CI)			X																					
Residential Care Facility for the Elderly (RCFE)			X																					
Residential Dwelling Unit							X																	
Residential Facility (RF)			X																					
Restraint			X																					
Restricted Area										X		X	X	X	X									
Restricted Entrance							X																	
Retrofit								X	X	X	X	X		X	X									
Riser				X	X	X	X																	
Rugged Equipment								X	X															
Running Slope				X	X	X	X																	
Sanitary Facility				X		X																		
Secure Interview Rooms			X																					
Self-Service Storage							X																	
Self-Service Storage Facility				†	†	†																		
Service Entrance							X																	
Shall							X																	
Shallow Pool																		X						
Shopping Center (or Shopping Mall)							X																	

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CALIFORNIA BUILDING CODE – MATRIX ADOPTION TABLE
CHAPTER 2 – DEFINITIONS—continued

Adopting agency	BSC	BSC-CG	SFM	HCD			DSA			OSHPD							BSCC	DPH	AGR	DWR	CEC	CA	SL	SLC
				1	2	1/AC	AC	SS	SS/CC	1	1R	2	3	4	5	6								
Adopt entire chapter	X															X								
Adopt entire chapter as amended (amended sections listed below)			X	X	X	X		X	X	X	X	X	X	X	X									
Adopt only those sections that are listed below							X										X	X						
Chapter / Section																								
Should				X	X		X																	
Sidewalk				X	X	X	X																	
Sign						X	X																	
Significant Loss of Function								X	X	X	X	X		X	X									
Single-Accommodation Sanitary Facility						X																		
Sink						X	X																	
Site							X																	
Site Development						X																		
Sleeping Accommodations				X	X	X	X																	
Slip Resistant																		X						
Slope						X																		
Small Management Yard			X																					
Soft Contained Play Structure							X																	
Space				X	X	X	X																	
SPC 1, SPC 2, SPC 3, SPC 4D and SPC 5										X														
SPC Building										X	X													
Special Amusement Area			X																					
Special Inspection								X	X	X	X	X		X	X									
Specified Public Transportation							X																	
Stage							X																	
Stair							X																	
Stairs																		X						
Stairway							X																	
State-Owned/Leased Building			X																					
Step																		X						
Steps, Recessed Steps, Ladders and Recessed Treads																		X						
Story *(2nd paragraph only)*							X																	
Structural Frame							X																	
Structure							X																	
Sub-Component										X	X	X		X	X									
Surface Mounted Component										X	X	X		X	X									
Tactile				X	X	X	X																	
Tactile Sign				X	X	X	X																	
Technically Infeasible							X																	
Teeing Ground							X																	
Temporary							X																	
Temporary Holding Cell, Room or Area.			X														X							
Temporary Holding Facility			X																					
Tenable Environment			X																					
Terminally Ill			X																					

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CALIFORNIA BUILDING CODE – MATRIX ADOPTION TABLE
CHAPTER 2 – DEFINITIONS—continued

Adopting agency	BSC	BSC-CG	SFM	HCD			DSA			OSHPD							BSCC	DPH	AGR	DWR	CEC	CA	SL	SLC
				1	2	1/AC	AC	SS	SS/CC	1	1R	2	3	4	5	6								
Adopt entire chapter	X															X								
Adopt entire chapter as amended (amended sections listed below)			X	X	X	X		X	X	X	X	X	X	X	X									
Adopt only those sections that are listed below							X										X	X						
Chapter / Section																								
Testing Agency				X	X																			
Text Telephone						X	X																	
Toddler			X																					
Torque-Controlled Post-Installed Anchor								X	X	X	X	X		X	X									
Transfer Device							X																	
Transient Lodging				X	X	X	X																	
Transit Boarding Platform							X																	
Transition Plate							X																	
Tread				X	X	X																		
Treatment of Water																		X						
TTY						X	X																	
Turnover Time																		X						
Uniformity Coefficient																		X						
Unreasonable Hardship				X	X	X	X																	
Use Zone							X																	
Valuation Threshold							X																	
Variable Message Signs (VMS)							X																	
Variable Message Sign (VMS) Characters							X																	
Vehicular or Pedestrian Arrival Points						X																		
Vehicular Way						X	X																	
Waiting Room			X																					
Walk						X	X																	
Waterline																		X						
Wet Bar							X																	
Wheelchair						X	X																	
Wheelchair Space							X																	
Winery Caves			X																					
Work Area Equipment							X																	
Workstation *(2nd paragraph only)*							X																	

The state agency does not adopt sections identified by the following symbol: †
The Office of the State Fire Marshal's adoption of this chapter or individual sections is applicable to structures regulated by other state agencies pursuant to Section 1.11.

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CHAPTER

2 DEFINITIONS

About this chapter:	Codes, by their very nature, are technical documents. Every word, term and punctuation mark can add to or change the meaning of a technical requirement. It is necessary to maintain a consensus on the specific meaning of each term contained in the code. Chapter 2 performs this function by stating clearly what specific terms mean for the purposes of the code.
ICC code development note:	Code change proposals to sections preceded by the designation [A], [BG] or [BS] will be considered by one of the code development committees meeting during the 2025 (Group B) Code Development Cycle.

SECTION 201—GENERAL

201.1 Scope. Unless otherwise expressly stated, the following words and terms shall, for the purposes of this code, have the meanings shown in this chapter.

201.2 Interchangeability. Words used in the present tense include the future; words stated in the masculine gender include the feminine and neuter; the singular number includes the plural and the plural, the singular.

201.3 Terms defined in other codes. Where terms are not defined in this code and are defined in the *California Energy Code, California Existing Building Code, California Fire Code, California Green Building Standards Code, California Electrical Code, California Mechanical Code or California Plumbing Code*, such terms shall have the meanings ascribed to them as in those codes.

201.4 Terms not defined. Where terms are not defined through the methods authorized by this section, such terms shall have ordinarily accepted meanings such as the context implies.

For applications listed in Section 1.11 regulated by the Office of the State Fire Marshal, where terms are not defined through the methods authorized by this section, such terms shall have ordinarily accepted meanings such as the context implies. Webster's Third New International Dictionary of the English Language, Unabridged, shall be considered as providing ordinarily accepted meanings.

SECTION 202—DEFINITIONS

[BG] 24-HOUR BASIS. The actual time that a person is an occupant within a facility for the purpose of receiving care. It shall not include a facility that is open for 24 hours and is capable of providing care to someone visiting the facility during any segment of the 24 hours.

[BS] AAC MASONRY. Masonry made of autoclaved aerated concrete (AAC) units, manufactured without internal reinforcement and bonded together using thin- or thick-bed mortar.

ACCESS AISLE. [DSA-AC] *An accessible space adjacent to or between vehicle spaces that provides clearances in compliance with this code.*

ACCESSIBILITY. [DSA-AC & HCD 1-AC] *The combination of various elements in a building, facility, site or area, or portion thereof which allows access, circulation and the full use of the building and facilities by persons with disabilities in compliance with this code.*

ACCESSIBILITY FUNCTION BUTTON. [DSA-AC] *A button on an elevator hall call console in a destination-oriented elevator system that when pressed will activate a series of visual and verbal prompts and announcements providing instruction regarding hall call console operation and direction to an assigned elevator.*

ACCESSIBLE. [DSA-AC & HCD 1-AC] *A site, building, facility, or portion thereof that is approachable and usable by persons with disabilities in compliance with this code.*

ACCESSIBLE ELEMENT. [DSA-AC] *An element specified by the regulations adopted by the Division of the State Architect—Access Compliance.*

[BE] ACCESSIBLE MEANS OF EGRESS. A continuous and unobstructed way of egress travel from any accessible point in a building or facility to a public way.

ACCESSIBLE ROUTE. [DSA-AC & HCD 1-AC] *A continuous unobstructed path connecting accessible elements and spaces of an accessible site, building or facility that can be negotiated by a person with a disability using a wheelchair, and that is also safe for and usable by persons with other disabilities. Interior accessible routes may include corridors, hallways, floors, ramps, elevators and lifts. Exterior accessible routes may include parking access aisles, curb ramps, crosswalks at vehicular ways, walks, ramps and lifts.*

ACCESSIBLE SPACE. [DSA-AC & HCD 1-AC] *A space that complies with the accessibility provisions of this code.*

ACCESSORY DWELLING UNIT. [HCD 1 & HCD 2] *An attached or detached residential dwelling unit that provides complete independent living facilities for one or more persons and is located on a lot with a proposed or existing primary residence. Accessory dwelling units shall include permanent provisions for living, sleeping, eating, cooking and sanitation on the same parcel as the single-family or multifamily dwelling is or will be situated. (See Government Code Section 66313)*

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[BS] ACCREDITATION BODY. An approved, third-party organization that is independent of the grading and inspection agencies, and the lumber mills, and that initially accredits and subsequently monitors, on a continuing basis, the competency and performance of a grading or inspection agency related to carrying out specific tasks.

ACTIVE EARTHQUAKE FAULT. [DSA-SS, DSA-SS/CC, OSHPD 1, 1R, 2, 4 & 5] *A fault that has been the source of earthquakes or is recognized as a potential source of earthquakes, including those that have exhibited surface displacement within Holocene time (about 11,000 years) as determined by California Geological Survey (CGS) under the Alquist-Priolo Earthquake Fault Zoning Act, those included as type A or type B faults for the U.S. Geological Survey (USGS) National Seismic Hazard Maps, and faults considered to have been active in Holocene time by any authoritative source, federal, state or local governmental agency.*

ACTIVE EQUIPMENT/COMPONENT. [DSA-SS, DSA-SS/CC & OSHPD 1, 1R, 2, 4 & 5] *Equipment/Component containing moving or rotating parts, electrical parts such as switches or relays, or other internal components that are sensitive to earthquake forces and critical to the function of the equipment.*

ADAPTABLE. [DSA-AC] *Capable of being readily modified and made accessible.*

ADAPTABLE DWELLING UNIT. [HCD 1-AC] *An accessible dwelling unit within a covered multifamily building as designed with elements and spaces allowing the dwelling unit to be adapted or adjusted to accommodate the user. See Chapter 11A, Division IV.*

[A] ADDITION. An extension or increase in floor area, number of stories or height of a building or structure. ***[DSA-AC]*** *An expansion, extension or increase in the gross floor area or height of a building or facility.*

[BS] ADHERED MASONRY VENEER. Veneer secured and supported through the adhesion of an approved bonding material applied to an approved backing.

ADJUSTED CONSTRUCTION COST. [DSA-AC] *All costs directly related to the construction of a project, including labor, material, equipment, services, utilities, contractor financing, contractor overhead and profit, and construction management costs. The costs shall not be reduced by the value of components, assemblies, building equipment or construction not directly associated with accessibility or usability. The adjusted construction cost shall not include: project management fees and expenses, architectural and engineering fees, testing and inspection fees, and utility connection or service district fees.*

ADMINISTRATIVE AUTHORITY. [DSA-AC] *A governmental agency that adopts or enforces regulations and guidelines for the design, construction or alteration of buildings and facilities.*

[BS] ADOBE CONSTRUCTION. Construction in which the exterior load-bearing and nonload-bearing walls and partitions are of unfired clay masonry units, and floors, roofs and interior framing are wholly or partly of wood or other approved materials.

Adobe, stabilized. Unfired clay masonry units to which admixtures, such as emulsified asphalt, are added during the manufacturing process to limit the units' water absorption so as to increase their durability.

Adobe, unstabilized. Unfired clay masonry units that do not meet the definition of "Adobe, stabilized."

ADULT CHANGING FACILITY. *A facility that is for use by persons with disabilities who need assistance with personal hygiene.*

[F] AEROSOL CONTAINER. A metal can or plastic container up to a maximum size of 33.8 fluid ounces (1000 ml), or a glass bottle up to a maximum size of 4 fluid ounces (118 ml), designed and intended to dispense an aerosol.

[F] AEROSOL PRODUCT. A combination of a container, a propellant and a material that is dispensed. Aerosol products shall be classified by means of the calculation of their chemical heats of combustion and shall be designated Level 1, Level 2 or Level 3.

Level 1 aerosol products. Those with a total chemical heat of combustion that is less than or equal to 8,600 British thermal units per pound (Btu/lb) (20 kJ/g).

Level 2 aerosol products. Those with a total chemical heat of combustion that is greater than 8,600 Btu/lb (20 kJ/g), but less than or equal to 13,000 Btu/lb (30 kJ/g).

Level 3 aerosol products. Those with a total chemical heat of combustion that is greater than 13,000 Btu/lb (30 kJ/g).

AGED HOME OR INSTITUTION. *A facility used for the housing of persons 65 years of age or older in need of care and supervision. (See definition of "care and supervision")*

[BS] AGGREGATE. In roofing, crushed stone, crushed slag or water-worn gravel used for surfacing for roof coverings.

[BG] AGRICULTURAL BUILDING. A structure designed and constructed to house farm implements, hay, grain, poultry, livestock or other horticultural products. This structure shall not be a place of human habitation or a place of employment where agricultural products are processed, treated or packaged, nor shall it be a place used by the public.

[BF] AIR-IMPERMEABLE INSULATION. An insulation having an air permeance equal to or less than 0.02 l/s × m^2 at 75 pa pressure differential tested in accordance with ASTM E283 or ASTM E2178.

[BG] AIR-INFLATED STRUCTURE. A structure that uses air-pressurized membrane beams, arches or other elements to enclose space. Occupants of such a structure do not occupy the pressurized area used to support the structure.

[BG] AIR-SUPPORTED STRUCTURE. A structure wherein the shape of the structure is attained by air pressure and occupants of the structure are within the elevated pressure area. Air-supported structures are of two basic types:

Double skin. Similar to a single skin, but with an attached liner that is separated from the outer skin and provides an airspace which serves for insulation, acoustic, aesthetic or similar purposes.

Single skin. Where there is only the single outer skin and the air pressure is directly against that skin.

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[BE] AISLE. An unenclosed exit access component that defines and provides a path of egress travel. ***[DSA-AC]*** *A circulation path between objects such as seats, tables, merchandise, equipment, displays, shelves, desks, etc., that provides clearances in compliance with this code.*

[BE] AISLE ACCESSWAY. That portion of an exit access that leads to an aisle.

[F] ALARM NOTIFICATION APPLIANCE. A fire alarm system component such as a bell, horn, speaker, light or text display that provides audible, tactile or visible outputs, or any combination thereof.

[F] ALARM SIGNAL. A signal indicating an emergency requiring immediate action, such as a signal indicative of fire.

[F] ALARM VERIFICATION FEATURE. A feature of automatic fire detection and alarm systems to reduce unwanted alarms wherein smoke detectors report alarm conditions for a minimum period of time, or confirm alarm conditions within a given time period, after being automatically reset, in order to be accepted as a valid alarm-initiation signal.

[BS] ALLOWABLE STRESS DESIGN. A method of proportioning structural members, such that elastically computed stresses produced in the members by nominal loads do not exceed specified allowable stresses (also called "working stress design").

[A] ALTERATION. Any construction or renovation to an existing structure other than repair or addition. ***[DSA-AC]*** *A change, addition or modification in construction, change in occupancy or use, or structural repair to an existing building or facility. Alterations include, but are not limited to, remodeling, renovation, rehabilitation, reconstruction, historic restoration, resurfacing of circulation paths or vehicular ways, changes or rearrangement of the structural parts or elements, and changes or rearrangement in the plan configuration of walls and full-height partitions. Normal maintenance, reroofing, painting or wallpapering, or changes to mechanical and electrical systems are not alterations unless they affect the usability of the building or facility.*

[BE] ALTERNATING TREAD DEVICE. A device that has a series of steps between 50 and 70 degrees (0.87 and 1.22 rad) from horizontal, usually attached to a center support rail in an alternating manner so that the user does not have both feet on the same level at the same time.

ALTERNATIVE SYSTEM. [OSHPD 1, 1R, 2, 4 & 5] *Alternative materials, design and methods of construction in accordance with Section 104.2.3, Section 11.1.4 of ASCE 7 or structural design criteria as approved by the enforcement agency.*

[BG] AMBULATORY CARE FACILITY. Buildings or portions thereof used to provide medical, surgical, psychiatric, nursing or similar care on a less than 24-hour basis to persons who are rendered incapable of self-preservation by the services provided or staff has accepted responsibility for care recipients already incapable.

AMUSEMENT ATTRACTION. [DSA-AC] *Any facility, or portion of a facility, located within an amusement park or theme park which provides amusement without the use of an amusement device. Amusement attractions include, but are not limited to, fun houses, barrels and other attractions without seats.*

AMUSEMENT RIDE. [DSA-AC] *A system that moves persons through a fixed course within a defined area for the purpose of amusement.*

AMUSEMENT RIDE SEAT. [DSA-AC] *A seat that is built-in or mechanically fastened to an amusement ride intended to be occupied by one or more passengers.*

[BG] ANCHOR BUILDING. An exterior perimeter building of a group other than H having direct access to a covered or open mall building but having required means of egress independent of the mall.

[BS] ANCHORED MASONRY VENEER. Veneer secured with approved mechanical fasteners to an approved backing.

[BF] ANNULAR SPACE. The opening around the penetrating item.

[F] ANNUNCIATOR. A unit containing one or more indicator lamps, alphanumeric displays or other equivalent means in which each indication provides status information about a circuit, condition or location.

ANSI. [DSA-AC] *The American National Standards Institute.*

[A] APPROVED. Acceptable to the building official *or enforcing agency.*

[HCD 1, HCD 2 & DSA-AC] *"Approved" means meeting the approval of the enforcing agency, except as otherwise provided by law, when used in connection with any system, material, type of construction, fixture or appliance as the result of investigations and tests conducted by the agency, or by reason of accepted principles or tests by national authorities or technical, health or scientific organizations or agencies.*

Notes: [HCD 1 & HCD 2]

1. *See Health and Safety Code Section 17920 for "Approved" as applied to residential construction and buildings or structures accessory thereto, as referenced in Section 1.8.2.1.1.*
2. *See Health and Safety Code Section 17921.1 for "Approved" as applied to the use of hotplates in residential construction referenced in Section 1.8.2.1.1.*
3. *See Health and Safety Code Section 19966 for "Approved" as applied to factory-built housing as referenced in Section 1.8.3.2.5.*
4. *See Health and Safety Code Section 18201 for "Approved" as applied to mobilehome parks as referenced in Section 1.8.2.1.3.*
5. *See Health and Safety Code Section 18862.1 for "Approved" as applied to special occupancy parks as referenced in Section 1.8.2.1.3.*

[A] APPROVED AGENCY. An established and recognized organization that is regularly engaged in conducting tests, furnishing inspection services or furnishing product evaluation or certification where such organization has been approved by the building official.

[HCD 1 & HCD 2] *"Approved agency" shall mean "Listing agency" and "Testing agency."*

[DSA-SS, DSA-SS/CC] *This term is synonymous with "laboratory of record" as referenced in Section 4-335 of the California Administrative Code.*

[BS] APPROVED FABRICATOR. An established and qualified person, firm or corporation approved by the building official pursuant to Chapter 17 of this code.

APPROVED LISTING AGENCY. [HCD 1 & HCD 2] *Any agency approved by the enforcing agency, unless otherwise provided by law, which is in the business of listing and labeling and which makes available at least an annual published report of such listings in which specific information is included that the product has been tested to recognized standards and found to comply.*

[A] APPROVED SOURCE. An independent person, firm or corporation, approved by the building official, who is competent and experienced in the application of engineering principles to materials, methods or systems analyses.

APPROVED TESTING AGENCY. [HCD 1, HCD 2, DSA-AC & OSHPD 1, 1R, 2, 4 & 5] *Any agency, which is determined by the enforcing agency, except as otherwise provided by law, to have adequate personnel and expertise to carry out the testing of systems, materials, types of construction, fixtures or appliances.*

[BS] AREA (for masonry).

Gross cross-sectional. The area delineated by the out-to-out specified dimensions of masonry in the plane under consideration.

Net cross-sectional. The area of masonry units, grout and mortar crossed by the plane under consideration based on out-to-out specified dimensions.

[BG] AREA, BUILDING. The area included within surrounding exterior walls, or exterior walls and fire walls, exclusive of vent shafts and courts. Areas of the building not provided with surrounding walls shall be included in the building area if such areas are included within the horizontal projection of the roof or floor above.

[BE] AREA OF REFUGE. An area where persons unable to use stairways can remain temporarily to await instructions or assistance during emergency evacuation.

[BE] AREA OF SPORT ACTIVITY. That portion of an indoor or outdoor space where the play or practice of a sport occurs.

[BG] AREAWAY. A subsurface space adjacent to a building open at the top or protected at the top by a grating or guard.

ASSEMBLY AREA. [DSA-AC] *A building or facility, or portion thereof, used for the purpose of entertainment, educational or civic gatherings, or similar purposes. For the purposes of these requirements, assembly areas include, but are not limited to, classrooms, lecture halls, courtrooms, public meeting rooms, public hearing rooms, legislative chambers, motion picture houses, auditoria, theaters, playhouses, dinner theaters, concert halls, centers for the performing arts, amphitheaters, arenas, stadiums, grandstands or convention centers.*

ASSEMBLY SEATING, MULTILEVEL. See "Multilevel assembly seating."

ASSISTIVE DEVICE. [HCD 1-AC] *An aid, tool or instrument used by persons with disabilities to assist in activities of daily living.*

ASSISTIVE LISTENING SYSTEM (ALS). [DSA-AC] *An amplification system utilizing transmitters, receivers and coupling devices to bypass the acoustical space between a sound source and a listener by means of induction loop, radio frequency, infrared or direct-wired equipment.*

[BG] ATRIUM. A vertical space that is closed at the top, connecting two or more stories in Group I-2 and I-3 occupancies or three or more stories in all other occupancies.

[BG] ATTIC. The space between the ceiling framing of the top story and the underside of the roof.

[F] AUDIBLE ALARM NOTIFICATION APPLIANCE. A notification appliance that alerts by the sense of hearing.

[F] AUTOMATIC. As applied to fire protection devices, a device or system providing an emergency function without the necessity for human intervention and activated as a result of a predetermined temperature rise, rate of temperature rise or combustion products.

AUTOMATIC DOOR. *A door equipped with a power-operated mechanism and controls that open and close the door automatically upon receipt of a momentary actuating signal. The switch that begins the automatic cycle may be a photoelectric device, floor mat or manual switch.*

[F] AUTOMATIC FIRE-EXTINGUISHING SYSTEM. An approved system of devices and equipment which automatically detects a fire and discharges an approved fire-extinguishing agent onto or in the area of a fire.

[BE] AUTOMATIC FLUSH BOLT. Door-locking hardware, installed on the inactive leaf of a pair of doors, which has a bolt that is extended automatically into the door frame or floor when the active leaf is closed after the inactive leaf, and which holds the inactive leaf in a closed position. When the active leaf is opened, the automatic flush bolt retracts the bolt or rod, allowing the inactive leaf to be opened (see "Constant latching bolt," "Dead bolt," "Manual bolt").

[F] AUTOMATIC SMOKE DETECTION SYSTEM. A fire alarm system that has initiation devices that utilize smoke detectors for protection of an area such as a room or space with detectors to provide early warning of fire.

[F] AUTOMATIC SPRINKLER SYSTEM. An automatic sprinkler system is an integrated network of piping and fire sprinklers designed in accordance with fire protection standards.

AUTOMATIC TELLER MACHINE (ATM). [DSA-AC] *Any electronic information processing device that accepts or dispenses cash in connection with a credit, deposit or convenience account. The term does not include devices used solely to facilitate check guarantees or check authorizations, or which are used in connection with the acceptance or dispensing of cash on a person-to-person basis, such as by a store cashier.*

[F] AUTOMATIC WATER MIST SYSTEM. *A system consisting of a water supply, a pressure source and a distribution piping system with attached nozzles, which, at or above a minimum operating pressure, defined by its listing, discharges water in fine droplets meeting the requirements of NFPA 750 for the purpose of the control, suppression or extinguishment of a fire. Such systems include wet-pipe, dry-pipe and pre-action types. The systems are designed as engineered, pre-engineered, local-application or total flooding systems.*

[F] AUTOMATIC WATER MIST SYSTEM. A system consisting of a water supply, a pressure source and a distribution piping system with attached nozzles, which, at or above a minimum operating pressure defined by its listing, discharges water in fine droplets meeting the requirements of NFPA 750 for the purpose of the control, suppression or extinguishment of a fire. Such systems include wet-pipe, dry-pipe and preaction types. The systems are designed as engineered, preengineered, local-application or total-flooding systems.

AUXILIARY AREA. *A public dressing, locker, shower or toilet area or building space intended to be used by bathers.*

[F] AVERAGE AMBIENT SOUND LEVEL. The root mean square, A-weighted sound pressure level measured over a 24-hour period, or the time any person is present, whichever time period is less.

[BG] AWNING. An architectural projection that provides weather protection, identity or decoration and is partially or wholly supported by the building to which it is attached. An awning is composed of a lightweight frame structure over which a covering is attached.

[BF] BACKING. The wall or surface to which the veneer is secured.

BACKWASH. *Is the process of thoroughly cleansing the filter media and/or elements and the contents of the filter vessel.*

[BE] BALANCED DOOR. A door equipped with double-pivoted hardware so designed as to cause a semicounterbalanced swing action when opening.

[F] BALED COTTON. A natural seed fiber wrapped in and secured with industry accepted materials, usually consisting of burlap, woven polypropylene, polyethylene or cotton or sheet polyethylene, and secured with steel, synthetic or wire bands or wire; also includes linters (lint removed from the cottonseed) and motes (residual materials from the ginning process).

[F] BALED COTTON, DENSELY PACKED. Cotton made into banded bales with a packing density of not less than 22 pounds per cubic foot (360 kg/m^3), and dimensions complying with the following: a length of 55 inches (1397 mm), a width of 21 inches (533.4 mm) and a height of 27.6 to 35.4 inches (701 to 899 mm).

[BS] BALLAST. In roofing, ballast comes in the form of large stones or paver systems or light-weight interlocking paver systems and is used to provide uplift resistance for roofing systems that are not adhered or mechanically attached to the roof deck.

[F] BARRICADE. A structure that consists of a combination of walls, floor and roof, which is designed to withstand the rapid release of energy in an explosion and which is fully confined, partially vented or fully vented; or other effective method of shielding from explosive materials by a natural or artificial barrier.

Artificial barricade. An artificial mound or revetment a minimum thickness of 3 feet (914 mm).

Natural barricade. Natural features of the ground, such as hills, or timber of sufficient density that the surrounding exposures that require protection cannot be seen from the magazine or building containing explosives when the trees are bare of leaves.

BASE. [DSA-SS, DSA-SS/CC, OSHPD 1, 1R, 2, 4 & 5] *See ASCE 7 Section 11.2.*

[BS] BASE FLOOD. The flood having a 1-percent chance of being equaled or exceeded in any given year.

[BS] BASE FLOOD ELEVATION. The elevation of the base flood, including wave height, relative to the National Geodetic Vertical Datum (NGVD), North American Vertical Datum (NAVD) or other datum specified on the *Flood Insurance Rate Map* (*FIRM*).

[BG] BASEMENT. A story that is not a story above grade plane (see "Story above grade plane"). This definition of "Basement" does not apply to the provisions of Section 1612 for flood loads.

[BS] BASEMENT (for flood loads). The portion of a building having its floor subgrade (below ground level) on all sides. This definition of "Basement" is limited in application to the provisions of Section 1612.

[BS] BASIC WIND SPEED, V. The wind speed used for design, as determined in Chapter 16.

BATHER. *A person using a pool and adjoining deck areas for the purpose of water sports such as diving, swimming, wading or related activities.*

BATHROOM. *For the purposes of Chapters 11A and 11B, a room which includes a water closet (toilet), a lavatory and a bathtub and/or a shower. It does not include single-fixture facilities or those with only a water closet and lavatory. It does include a compartmented bathroom. A compartmented bathroom is one in which the fixtures are distributed among interconnected rooms. A compartmented bathroom is considered a single unit and is subject to the requirements of Chapters 11A and 11B.*

[BS] BEARING WALL STRUCTURE. A building or other structure in which vertical loads from floors and roofs are primarily supported by walls.

[BS] BED JOINT. The horizontal layer of mortar on which a masonry unit is laid.

BEDRIDDEN PERSON. *A person, requiring assistance in turning and repositioning in bed, or being unable to independently transfer to and from bed, except in facilities with appropriate and sufficient care staff, mechanical devices if necessary, and safety precautions as determined in Title 22 regulations, by the Director of Social Services or his or her designated representative. Persons who are unable to independently transfer to and from bed, but who do not need assistance to turn or reposition in bed, shall be considered nonambulatory.*

The Director of Social Services or his or her designated representative shall make the determination of the bedridden status of persons with developmental disabilities, in consultation with the Director of Developmental Services or his or her designated representative.

The Director of Social Services or his or her designated representative shall make the determination of the bedridden status of all other persons with disabilities who are not developmentally disabled.

[BE] BLEACHERS. Tiered seating supported on a dedicated structural system and two or more rows high and is not a building element (see "Grandstand").

BLENDED TRANSITION. [DSA-AC] *A raised pedestrian crossing, depressed corner or similar connection that has a slope of 1:20 or less between a circulation path at the level of the sidewalk or walk and the level of a vehicular way.*

[BG] BOARDING HOUSE. A building arranged or used for lodging for compensation, with or without meals, and not occupied as a single-family unit.

BOARDING PIER. [DSA-AC] *A portion of a pier where a boat is temporarily secured for the purpose of embarking or disembarking.*

BOAT LAUNCH RAMP. [DSA-AC] *A sloped surface designed for launching and retrieving trailered boats and other water craft to and from a body of water.*

BOAT SLIP. [DSA-AC] *That portion of a pier, main pier, finger pier or float where a boat is moored for the purpose of berthing, embarking or disembarking.*

[F] BOILING POINT. The temperature at which the vapor pressure of a liquid equals the atmospheric pressure of 14.7 pounds per square inch (psia) (101 kPa) or 760 mm of mercury. Where an accurate boiling point is unavailable for the material in question, or for mixtures which do not have a constant boiling point, for the purposes of this classification, the 20-percent evaporated point of a distillation performed in accordance with ASTM D86 shall be used as the boiling point of the liquid.

BOTTLE-FILLING STATION. [DSA-AC] *A fixture that is designed and intended for filling personal use drinking water bottles or containers. Such fixtures can be separate from or integral to a drinking fountain.*

[BS] BRACED WALL LINE. A straight line through the building plan that represents the location of the lateral resistance provided by the wall bracing.

[BS] BRACED WALL PANEL. A full-height section of wall constructed to resist in-plane shear loads through interaction of framing members, sheathing material and anchors. The panel's length meets the requirements of its particular bracing method and contributes toward the total amount of bracing required along its braced wall line.

[BE] BREAKOUT. For revolving doors, a process whereby wings or door panels can be pushed open manually for means of egress travel.

[BS] BRICK.

Calcium silicate (sand lime brick). A pressed and subsequently autoclaved unit that consists of sand and lime, with or without the inclusion of other materials.

Clay or shale. A solid or hollow masonry unit of clay or shale, usually formed into a rectangular prism, then burned or fired in a kiln; brick is a ceramic product.

Concrete. A concrete masonry unit made from Portland cement, water, and suitable aggregates, with or without the inclusion of other materials.

[A] BUILDING. Any structure utilized or intended for supporting or sheltering any occupancy.

Exception: [HCD 1, HCD 2 & HCD 1-AC] *For applications listed in Section 1.8.2 regulated by the Department of Housing and Community Development, "Building" shall not include the following:*

1. *Any mobilehome as defined in Health and Safety Code Section 18008.*
2. *Any manufactured home as defined in Health and Safety Code Section 18007.*
3. *Any commercial modular as defined in Health and Safety Code Section 18001.8 or any special purpose commercial modular as defined in Section 18012.5.*
4. *Any recreational vehicle as defined in Health and Safety Code Section 18010.*
5. *Any multifamily manufactured home as defined in Health and Safety Code Section 18008.7.*

For additional information, see Health and Safety Code Section 18908.

Note: *Building shall have the same meaning as defined in Health and Safety Code Sections 17920 and 18908 for the applications specified in Section 1.11.*

BUILDING AREA. See "Area, building."

[BG] BUILDING ELEMENT. A fundamental component of building construction, specified in Table 601, which may or may not be of fire-resistance-rated construction and is constructed of materials based on the building type of construction.

BUILDING ENTRANCE ON AN ACCESSIBLE ROUTE. [HCD 1-AC] *An accessible entrance to a building that is connected by an accessible route to public transportation stops, to parking or passenger loading zones, or to public streets or sidewalks, if available.*

BUILDING, EXISTING. [HCD 1 & HCD 2] *A building erected prior to the adoption of this code, or one for which a legal building permit has been issued.*

BUILDING HEIGHT. See "Height, building."

[BG] BUILDING LINE. The line established by law, beyond which a building shall not extend, except as specifically provided by law.

[A] BUILDING OFFICIAL. The officer or other designated authority charged with the administration and enforcement of this code, or a duly authorized representative.

[BS] BUILDING-INTEGRATED PHOTOVOLTAIC (BIPV) ROOF COVERING. A *BIPV system* that also functions as a roof covering. Coverings include, but are not limited to, shingles, tiles and roof panels.

[BS] BUILDING-INTEGRATED PHOTOVOLTAIC (BIPV) ROOF PANEL. A photovoltaic panel that functions as a component of the building envelope.

[BS] BUILDING-INTEGRATED PHOTOVOLTAIC (BIPV) SYSTEM. A building system that incorporates photovoltaic modules and functions as an integral part of the building envelope, such as roof assemblies and roof coverings, exterior wall envelopes and exterior wall coverings, and fenestration.

[BS] BUILT-UP ROOF COVERING. Two or more layers of felt cemented together and surfaced with a cap sheet, mineral aggregate, smooth coating or similar surfacing material.

[BG] CANOPY. A permanent structure or architectural projection of rigid construction over which a covering is attached that provides weather protection, identity or decoration. A canopy is permitted to be structurally independent or supported by attachment to a building on one or more sides.

[F] CAPACITOR ENERGY STORAGE SYSTEM. A stationary, rechargeable energy storage system consisting of capacitors, chargers, controls and associated electrical equipment designed to provide electrical power to a building or facility. The system is typically used to provide standby or emergency power, an uninterruptable power supply, load shedding, load sharing or similar capabilities.

[F] CARBON DIOXIDE EXTINGUISHING SYSTEMS. A system supplying carbon dioxide (CO_2) from a pressurized vessel through fixed pipes and nozzles. The system includes a manual- or automatic-actuating mechanism.

[F] CARBON MONOXIDE ALARM. A single- or multiple-station alarm intended to detect carbon monoxide gas and alert occupants by a distinct audible signal. It incorporates a sensor, control components and an alarm notification appliance in a single unit.

[F] CARBON MONOXIDE DETECTOR. A device with an integral sensor to detect carbon monoxide gas and transmit an alarm signal to a connected alarm control unit.

CARE AND SUPERVISION. *Any one or more of the following activities provided by a person or facility to meet the needs of the clients:*

1. *Assistance in dressing, grooming, bathing and other personal hygiene.*
2. *Assistance with taking medication.*
3. *Central storing and/or distribution of medications.*
4. *Arrangement of and assistance with medical and dental care.*
5. *Maintenance of house rules for the protection of clients.*
6. *Supervision of client schedules and activities.*
7. *Maintenance and/or supervision of client cash resources or property.*
8. *Monitoring food intake or special diets.*
9. *Providing basic services required by applicable law and regulation to be provided by the licensee in order to obtain and maintain a community-care facility license.*

[F] CARBON MONOXIDE SOURCE. A piece of commonly used equipment or permanently installed appliance, fireplace or process that produces or emits carbon monoxide gas.

[BG] CARE SUITE. In Group I-2 occupancies, a group of treatment rooms, care recipient sleeping rooms and the support rooms or spaces and circulation space within the suite where staff are in attendance for supervision of all care recipients within the suite, and the suite is in compliance with the requirements of Section 407.4.4.

CARRIAGE UNIT. [HCD 1-AC] *A dwelling unit with living space on one or more floors immediately above a Group U, private garage or garages. The footprint of the garage or garages is used as the footprint for the remaining floor or floors of the units above and the garage level contains no habitable space.*

Note: *Dwelling units located over a common garage shall not be considered carriage units.*

[BS] CAST STONE. A building stone manufactured from Portland cement concrete precast and used as a trim, veneer or facing on or in buildings or structures.

CATASTROPHICALLY INJURED. *As termed, means a person whose origin of disability was acquired through trauma or nondegenerative neurologic illness, for whom it has been determined by the Department of Health Services Certification and Licensing that active rehabilitation would be beneficial.*

CATCH POOL. [DSA-AC] *A pool or designated section of a pool used as a terminus for water slide flumes.*

CCR. [DSA-AC] *The California Code of Regulations.*

CDCR. *California Department of Corrections and Rehabilitation.*

[BS] CAST-IN-PLACE CONCRETE EQUIVALENT DIAPHRAGM. See Section 1905.2.

[F] CEILING LIMIT. The maximum concentration of an airborne contaminant to which one may be exposed. The ceiling limits utilized are those published in DOL 29 CFR Part 1910.1000. The ceiling Recommended Exposure Limit (REL-C) concentrations published by the US National Institute for Occupational Safety and Health (NIOSH), Threshold Limit Value—Ceiling (TLV-C) concentrations published by the American Conference of Governmental Industrial Hygienists (ACGIH), Ceiling Workplace Environmental Exposure Level (WEEL-Ceiling) Guides published by the American Industrial Hygiene Association (AIHA), and other approved, consistent measures are allowed as surrogates for hazardous substances not listed in DOL 29 CFR Part 1910.1000.

[BF] CEILING RADIATION DAMPER. A listed device installed in a ceiling membrane of a fire-resistance-rated floor/ceiling or roof/ceiling assembly to limit automatically the radiative heat transfer through an air inlet/outlet opening. Ceiling radiation dampers include air terminal units, ceiling dampers and ceiling air diffusers. Ceiling radiation dampers are classified for use in either static systems that will automatically shut down in the event of a fire, or in dynamic systems that continue to operate during a fire. A dynamic ceiling radiation damper is tested and rated for closure under elevated temperature airflow.

CELL *(Detention or correctional facility). [SFM]* *A sleeping unit or housing unit in a detention or correctional facility for the confinement of not more than two inmates or prisoners.*

[BG] CELL (Group I-3 occupancy). A room within a housing unit in a detention or correctional facility used to confine inmates or prisoners.

[BS] CELL (masonry). A void space having a gross cross-sectional area greater than $1^1/_2$ square inches (967 mm^2).

CELL COMPLEX. *A cluster or group of cells or dormitories in a jail, prison or other detention facility, together with rooms used for accessory purposes, all of which open into the cell complex, and are used for functions such as dining, counseling, exercise, classrooms, sick call, visiting, storage, staff offices, control rooms or similar functions, and interconnecting corridors all within the cell complex.*

[BG] CELL TIER. Levels of cells vertically stacked above one another within a housing unit.

CELL TIERS. *Cells, dormitories and accessory spaces. Cell tiers are located one level above the other and do not exceed two levels per floor. A cell tier shall not be considered a story or mezzanine. The aggregate area of a tier within a housing pod shall not be greater than one-third of the floor area of that pod when supported by non-rated construction, and shall be no greater than two-thirds of the floor area of the pod when the tier floor and supporting elements meet the fire rating requirements of a floor.*

CELLULAR CONCRETE. [HCD 1 & HCD 2] *A lightweight product consisting of Portland cement and selected gas-forming chemicals or foaming agents which create homogeneous voids in the hardened concrete.*

[BS] CEMENT PLASTER. A mixture of Portland or blended cement, Portland cement or blended cement and hydrated lime, masonry cement or plastic cement and aggregate and other approved materials as specified in this code.

CENTRAL CONTROL BUILDING. *A secure building within a prison where the fire and life safety systems, communication systems, security systems and exterior lighting systems are monitored and where security operations necessitate the remote locking of required means of egress or at the door with a key to maintain a high security area*

[BF] CERAMIC FIBER BLANKET. A high-temperature mineral wool insulation material made of alumina-silica ceramic or calcium magnesium silicate soluble fibers and weighing 4 to 10 pounds per cubic foot (pcf) (64 to 160 kg/m^3).

[BS] CERTIFICATE OF COMPLIANCE. A certificate stating that materials and products meet specified standards or that work was done in compliance with approved construction documents.

[A] CHANGE OF OCCUPANCY. Either of the following shall be considered as a change of occupancy where this code requires a greater degree of safety, accessibility, structural strength, fire protection, means of egress, ventilation or sanitation than is existing in the current building or structure:

1. Any change in the occupancy classification of a building or structure.
2. Any change in the purpose of, or a change in the level of activity within, a building or structure.

CHARACTERS. *Letters, numbers, punctuation marks and typographic symbols.*

CHARTER SCHOOL. *A public school providing instruction from kindergarten through 12th grade, established pursuant to Education Code, Title 2, Division 4, Part 26.8, Section 47600, et seq.*

CHILD-CARE. *For the purposes of these regulations, means the care of children during any period of a 24-hour day where permanent sleeping accommodations are not provided. The time-period shall not be more than 24 hours.*

Note: *"Child care" shall not be construed to preclude the use of cots or mats for napping purposes, provided all employees, attendants and staff personnel are awake and on duty in the area where napping occurs.*

CHILD-CARE CENTER. *Any facility of any capacity other than a large or small family day-care home as defined in these regulations in which less than 24-hour-per-day nonmedical supervision is provided for children in a group setting.*

CHILD OR CHILDREN. *A person or persons under the age of 18 years.*

CHILDREN'S USE. [DSA-AC] *Describes spaces and elements specifically designed for use primarily by people 12 years old and younger.*

[M] CHIMNEY. A primarily vertical structure containing one or more flues, for the purpose of carrying gaseous products of combustion and air from a fuel-burning appliance to the outdoor atmosphere.

Factory-built chimney. A listed and labeled chimney composed of factory-made components, assembled in the field in accordance with manufacturer's instructions and the conditions of the listing.

Masonry chimney. A field-constructed chimney composed of solid masonry units, bricks, stones, or concrete.

Metal chimney. A field-constructed chimney of metal.

[M] CHIMNEY TYPES.

High-heat appliance type. An approved chimney for removing the products of combustion from fuel-burning, high-heat appliances producing combustion gases in excess of 2,000°F (1093°C) measured at the appliance flue outlet (see Section 2113.11.3).

Low-heat appliance type. An approved chimney for removing the products of combustion from fuel-burning, low-heat appliances producing combustion gases not in excess of 1,000°F (538°C) under normal operating conditions, but capable of producing combustion gases of 1,400°F (760°C) during intermittent forces firing for periods up to 1 hour. Temperatures shall be measured at the appliance flue outlet.

Masonry type. A field-constructed chimney of solid masonry units or stones.

Medium-heat appliance type. An approved chimney for removing the products of combustion from fuel-burning, medium-heat appliances producing combustion gases not exceeding 2,000°F (1093°C) measured at the appliance flue outlet (see Section 2113.11.2).

CHRONICALLY ILL. *See "Terminally ill."*

[BE] CIRCULATION PATH. An exterior or interior way of passage from one place to another for pedestrians. ***[DSA-AC]*** *An exterior or interior way of passage provided for pedestrian travel, including but not limited to, walks, sidewalks, hallways, courtyards, elevators, platform lifts, ramps, stairways and landings.*

[F] CLEAN AGENT. Electrically nonconducting, volatile or gaseous fire extinguishant that does not leave a residue upon evaporation.

CLEAN POOL WATER. *Is a pool water that is free of dirt, oils, scum, algae, floating materials or other visible organic and inorganic materials that would sully the water.*

CLEAR. [DSA-AC] *Unobstructed.*

CLEAR FLOOR SPACE. [DSA-AC & HCD 1-AC] *The minimum unobstructed floor or ground space required to accommodate a single, stationary wheelchair and occupant.*

CLEAR POOL WATER. *Pool water that is free from cloudiness and is transparent.*

[BG] CLIMATE ZONE. A geographical region that has been assigned climatic criteria as specified in Chapters 3 [CE] and 3 [RE] of the *International Energy Conservation Code* (IECC) or, for *California Energy Code provisions, Figure 100. 1-A of the California Energy Code*.

[BG] CLINIC, OUTPATIENT. Buildings or portions thereof used to provide medical care on less than a 24-hour basis to persons who are not *classified as nonambulatory or bedridden or* rendered incapable of self-preservation by the services provided.

CLOSED-CIRCUIT TELEPHONE. [DSA-AC] *A telephone with a dedicated line such as a house phone, courtesy phone or phone that must be used to gain entry to a facility.*

[F] CLOSED SYSTEM. The use of a solid or liquid hazardous material involving a closed vessel or system that remains closed during normal operations where vapors emitted by the product are not liberated outside of the vessel or system and the product is not exposed to the atmosphere during normal operations; and all uses of compressed gases. Examples of closed systems for solids and liquids include product conveyed through a piping system into a closed vessel, system or piece of equipment.

[BS] COASTAL A ZONE. Area within a special flood hazard area, landward of a V zone or landward of an open coast without mapped coastal high-hazard areas. In a coastal A zone, the principal source of flooding must be astronomical tides, storm surges, seiches or tsunamis, not riverine flooding. During the base flood conditions, the potential for breaking wave height shall be greater than or equal to $1^1/_2$ feet (457 mm). The inland limit of the *coastal A zone* is (a) the *Limit of Moderate Wave Action* if delineated on a *FIRM*, or (b) designated by the authority having jurisdiction.

[BS] COASTAL HIGH-HAZARD AREA. Area within the special flood hazard area extending from offshore to the inland limit of a primary dune along an open coast and any other area that is subject to high-velocity wave action from storms or seismic sources, and shown on a *Flood Insurance Rate Map* (*FIRM*) or other flood hazard map as velocity Zone V, VO, VE or V1-30.

[BS] COLLAR JOINT. Vertical longitudinal space between wythes of masonry or between masonry wythe and backup construction that is permitted to be filled with mortar or grout.

[BS] COLLECTOR. A horizontal diaphragm element parallel and in line with the applied force that collects and transfers diaphragm shear forces to the vertical elements of the lateral force-resisting system or distributes forces within the diaphragm, or both.

[BF] COMBINATION FIRE/SMOKE DAMPER. A listed device installed in ducts and air transfer openings designed to close automatically upon the detection of heat and resist the passage of flame and smoke. The device is installed to operate automatically, controlled by a smoke detection system, and where required, is capable of being positioned from a fire command center.

[BS] COMBINED PILE RAFT. A geotechnical composite construction that combines the bearing effect of both foundation elements, raft and piles, by taking into account interactions between the foundation elements and the subsoil.

[F] COMBUSTIBLE DUST. Finely divided solid material that is 420 microns or less in diameter and which, when dispersed in air in the proper proportions, could be ignited by a flame, spark or other source of ignition. Combustible dust will pass through a US No. 40 standard sieve.

[F] COMBUSTIBLE FIBERS. Readily ignitable and free-burning materials in a fibrous or shredded form, such as cocoa fiber, cloth, cotton, excelsior, hay, hemp, henequen, istle, jute, kapok, oakum, rags, sisal, Spanish moss, straw, tow, wastepaper, certain synthetic fibers or other like materials. This definition does not include densely packed baled cotton.

[F] COMBUSTIBLE LIQUID. A liquid having a closed cup flash point at or above 100°F (38°C). Combustible liquids shall be subdivided as follows:

The category of combustible liquids does not include compressed gases or cryogenic fluids or liquids that do not have a fire point when tested in accordance with ASTM D92.

Class II. Liquids having a closed cup flash point at or above 100°F (38°C) and below 140°F (60°C).

Class IIIA. Liquids having a closed cup flash point at or above 140°F (60°C) and below 200°F (93°C).

Class IIIB. Liquids having a closed cup flash point at or above 200°F (93°C).

COMMERCIAL FACILITIES [DSA-AC]. *Facilities whose operations will affect commerce and are intended for non-residential use by a private entity. Commercial facilities shall not include (1) facilities that are covered or expressly exempted from coverage under the Fair Housing Act of 1968, as amended (42 U.S.C. 3601 - 3631); (2) aircraft; or (3) railroad locomotives, railroad freight cars, railroad cabooses, commuter or intercity passenger rail cars (including coaches, dining cars, sleeping cars, lounge cars and food service cars), any other railroad cars described in Section 242 of the Americans With Disabilities Act or covered under Title II of the Americans With Disabilities Act, or railroad rights-of-way. For purposes of this definition, "rail" and "railroad" have the meaning given the term "railroad" in Section 202(e) of the Federal Railroad Safety Act of 1970 (45 U.S.C. 431(e)).*

[F] COMMERCIAL MOTOR VEHICLE. A motor vehicle used to transport passengers or property where the motor vehicle meets one of the following:

1. Has a gross vehicle weight rating of 10,000 pounds (4540 kg) or more.
2. Is designed to transport 16 or more passengers, including the driver.

COMMERCIAL PLACE OF PUBLIC AMUSEMENT. [DSA-AC] *An auditorium, convention center, cultural complex, exhibition hall, permanent amusement park, sports arena, theater or movie house for which the maximum occupancy is 2,500 or more for the facility. Cultural complexes include but are not limited to art galleries, symphony, concert halls and museums. A commercial place of public amusement does not include any public or private higher education facility or district agricultural associations.*

[BE] COMMON PATH OF EGRESS TRAVEL. That portion of exit access travel distance measured from the most remote point of each room, area or space to that point where the occupants have separate and distinct access to two exits or exit access doorways.

COMMON USE. Interior or exterior circulation paths, rooms, spaces or elements that are not for public use and are made available for the shared use of two or more people.

COMMON USE AREAS. [HCD 1-AC] *Private use areas within multifamily residential facilities where the use of these areas is limited exclusively to owners, residents and their guests. The areas may be defined as rooms or spaces or elements inside or outside of a building.*

COMMUNITY CARE FACILITY. *Any facility, place or building that is maintained and operated to provide nonmedical residential care, day treatment, adult day care or agency services for children, adults, or children and adults, including, but not limited to, the physically handicapped, mentally impaired, incompetent persons, and abused or neglected children, and includes but is not limited to the following as defined in Health and Safety Code Section 1502:*

1. *Residential facility*
2. *Adult day program*
3. *Therapeutic day services facility*
4. *Social rehabilitation facility*
5. *Community treatment facility*
6. *Full-service adoption agency*
7. *Transitional shelter care facility*
8. *Transitional housing placement facility*

COMMUNITY CORRECTIONAL REENTRY CENTERS—CALIFORNIA DEPARTMENT OF CORRECTIONS AND REHABILITATION [CDCR]. *Community-located facilities that provide housing and transitional rehabilitative or community-based programing services for ambulatory inmates. CDCR Program services assist with substance use disorder treatment, employment, education, family reunification and social support. Program participants remain under the jurisdiction of CDCR, are monitored by CDCR staff and supervised by CDCR approved/contracted program providers 24/7. The facilities include residential living, food services, administrative and program functional spaces in a non-licensed 24 hr. facility.*

COMPLY WITH. [DSA-AC] *Comply with means to meet one or more provisions of this code.*

[F] COMPRESSED GAS. A material or mixture of materials that meets both of the following:

1. Is a gas at 68°F (20°C) or less at 14.7 pounds per square inch atmosphere (psia) (101 kPa) of pressure.

2. Has a boiling point of 68°F (20°C) or less at 14.7 psia (101 kPa) which is either liquefied, nonliquefied or in solution, except those gases which have no other health- or physical-hazard properties are not considered to be compressed until the pressure in the packaging exceeds 41 psia (282 kPa) at 68°F (20°C).

The states of a compressed gas are categorized as follows:

1. Nonliquefied compressed gases are gases, other than those in solution, which are in a packaging under the charged pressure and are entirely gaseous at a temperature of 68°F (20°C).
2. Liquefied compressed gases are gases that, in a packaging under the charged pressure, are partially liquid at a temperature of 68°F (20°C).
3. Compressed gases in solution are nonliquefied gases that are dissolved in a solvent.
4. Compressed gas mixtures consist of a mixture of two or more compressed gases contained in a packaging, the hazard properties of which are represented by the properties of the mixture as a whole.

[BG] COMPUTER ROOM. A room or portions of a building used primarily to house information technology equipment (ITE) and serving an ITE load less than or equal to10 kW or 20 W/ft^2 (215 W/m^2) of conditioned floor area.

[BS] CONCRETE.

Carbonate aggregate. Concrete made with aggregates consisting mainly of calcium or magnesium carbonate, such as limestone or dolomite, and containing 40 percent or less quartz, chert or flint.

Cellular. [HCD 1 & HCD 2] *See "Cellular Concrete."*

Cellular. A lightweight insulating concrete made by mixing a preformed foam with Portland cement slurry and having a dry unit weight of approximately 30 pcf (480 kg/m^3).

Lightweight aggregate. Concrete made with aggregates of expanded clay, shale, slag or slate or sintered fly ash or any natural lightweight aggregate meeting ASTM C330 and possessing equivalent fire-resistance properties and weighing 85 to 115 pcf (1360 to 1840 kg/m^3).

Perlite. A lightweight insulating concrete having a dry unit weight of approximately 30 pcf (480 kg/m^3) made with *perlite* concrete aggregate. Perlite aggregate is produced from a volcanic rock which, when heated, expands to form a glass-like material of cellular structure.

Sand-lightweight. Concrete made with a combination of expanded clay, shale, slag, slate, sintered fly ash, or any natural lightweight aggregate meeting ASTM C330 and possessing equivalent fire-resistance properties and natural sand. Its unit weight is generally between 105 and 120 pcf (1680 and 1920 kg/m^3).

Siliceous aggregate. Concrete made with normal-weight aggregates consisting mainly of silica or compounds other than calcium or magnesium carbonate, which contains more than 40-percent quartz, chert or flint.

Vermiculite. A light weight insulating concrete made with vermiculite concrete aggregate which is laminated micaceous material produced by expanding the ore at high temperatures. When added to a Portland cement slurry the resulting concrete has a dry unit weight of approximately 30 pcf (480 kg/m^3).

CONGREGATE LIVING HEALTH FACILITY (CLHF). *As defined in Health and Safety Code Section 1250.*

(1) A residential home with a capacity, except as provided in paragraph (4), of no more than 18 beds, that provides inpatient care, including the following basic services: medical supervision, 24-hour skilled nursing and supportive care, pharmacy, dietary, social, recreational, and at least one type of service specified in paragraph (2). The primary need of congregate living health facility residents shall be for availability of skilled nursing care on a recurring, intermittent, extended, or continuous basis. This care is generally less intense than that provided in general acute care hospitals but more intense than that provided in skilled nursing facilities.

(2) Congregate living health facilities shall provide one of the following services:

(A) Services for persons who are mentally alert, persons with physical disabilities, who may be ventilator dependent.

(B) Services for persons who have a diagnosis of terminal illness, a diagnosis of a life-threatening illness, or both. Terminal illness means the individual has a life expectancy of six months or less as stated in writing by his or her attending physician and surgeon. A "life-threatening illness" means the individual has an illness that can lead to a possibility of a termination of life within five years or less as stated in writing by his or her attending physician and surgeon.

(C) Services for persons who are catastrophically and severely disabled. A person who is catastrophically and severely disabled means a person whose origin of disability was acquired through trauma or nondegenerative neurologic illness, for whom it has been determined that active rehabilitation would be beneficial and to whom these services are being provided. Services offered by a congregate living health facility to a person who is catastrophically disabled shall include, but not be limited to, speech, physical, and occupational therapy.

(3) A congregate living health facility license shall specify which of the types of persons described in paragraph (2) to whom a facility is licensed to provide services.

(4)

(A) A facility operated by a city and county for the purposes of delivering services under this section may have a capacity of 59 beds.

(B) A congregate living health facility not operated by a city and county servicing persons who are terminally ill, persons who have been diagnosed with a life-threatening illness, or both, that is located in a county with a population of 500,000 or more persons, or located in a county of the 16th class pursuant to Section 28020 of the Government Code, may have not more than 25 beds for the purpose of serving persons who are terminally ill.

(C) A congregate living health facility not operated by a city and county serving persons who are catastrophically and severely disabled, as defined in subparagraph (C) of paragraph (1) that is located in a county of 500,000 or more persons may have not more than 12 beds for the purpose of serving persons who are catastrophically and severely disabled.

(5) A congregate living health facility shall have a noninstitutional, homelike environment.

CONGREGATE RESIDENCE. *Any building or portion thereof that contains facilities for living, sleeping and sanitation, as required by this code, and may include facilities for eating and cooking, for occupancy by other than a family. A congregate residence may be a shelter, convent, monastery, dormitory, fraternity or sorority house, but does not include jails, hospitals, nursing homes, hotels or lodging houses.*

[BG] CONGREGATE LIVING FACILITIES. A building or part thereof that contains sleeping units where residents share bathroom or kitchen facilities, or both.

[BE] CONSTANT LATCHING BOLT. Door-locking hardware installed on the inactive leaf of a pair of doors consisting of a bolt that automatically latches into the door frame or floor, holding the inactive leaf in a closed position. The latch bolt is retracted manually to allow the inactive leaf to be opened.

[F] CONSTANTLY ATTENDED LOCATION. A designated location at a facility staffed by trained personnel on a continuous basis where alarm or supervisory signals are monitored and facilities are provided for notification of the fire department or other emergency services.

[A] CONSTRUCTION DOCUMENTS. Written, graphic and pictorial documents prepared or assembled for describing the design, location and physical characteristics of the elements of a project necessary for obtaining a building permit.

[BG] CONSTRUCTION TYPES. See Section 602.

Type I. See Section 602.2.

Type II. See Section 602.2.

Type III. See Section 602.3.

Type IV. See Section 602.4.

Type V. See Section 602.5.

[BF] CONTINUITY HEAD-OF-WALL SYSTEM. An assemblage of specific materials or products that are designed to resist the passage of fire through voids created at the intersection of fire barriers and the underside of roof assemblies that are not fire-resistance rated for a prescribed period of time.

[BF] CONTINUOUS INSULATION (ci). Insulating material that is continuous across all structural members without thermal bridges other than fasteners and service openings. It is installed on the interior or exterior or is integral to any opaque surface of the building thermal envelope.

[F] CONTROL AREA. Spaces within a building where quantities of hazardous materials not exceeding the maximum allowable quantities per control area are stored, dispensed, used or handled. See the definition of "Outdoor control area" in the *California Fire Code*.

CONTROL ROOM. *A room that has staff that provides direct supervision of one or more cell tiers, pods, dormitories, housing units, sally ports, central holding areas, individual holding cells within central holding areas, as well as any number of courtroom holding cells and arraignment docks, and may have fire and personal alarm annunciation, ability to open and close doors, communicate with Central Control and monitor activities inside the area of control and the space immediately outside the Control Room's zone of influence.*

[BS] CONTROLLED LOW-STRENGTH MATERIAL. A self-compacted, cementitious material used primarily as a backfill in place of compacted fill.

[BS] CONVENTIONAL LIGHT-FRAME CONSTRUCTION. Construction whose primary structural elements are formed by a system of repetitive wood-framing members. See Section 2308 for conventional light-frame construction provisions.

[BG] CORNICE. A projecting horizontal molded element located at or near the top of an architectural feature.

CORRECTIONAL HOSPITALS. *Facilities that provide care and treatment for medical, psychiatric, obstetrical or surgical treatment of care recipients that are incapable of self-preservation within a detention facility such as a prison or jail.*

CORRECTIONAL MEDICAL OR MENTAL HEALTH HOUSING SUITE. *Within a state prison, correctional treatment facility, local detention facility or juvenile facility, a correctional medical or mental health housing suite shall be a group of patient rooms or cells and support spaces, including nurse stations, located around shared circulation.*

CORRECTIONAL MENTAL HEALTH FACILITIES. *Facilities that provide care and treatment for psychiatric treatment of care recipients that are incapable of self-preservation within a detention facility such as a prison or jail.*

CORRECTIONAL NURSING FACILITIES. *Facilities that provide care, including both intermediate care facilities and skilled nursing facilities, where any of the persons are incapable of self-preservation or classified as non-ambulatory or bedridden within a detention facility such as a prison or jail.*

CORRECTIONAL TREATMENT CENTERS. *Facilities that provide emergency and acute care and treatment for medical, psychiatric, obstetrical or surgical treatment of care recipients that are incapable of self-preservation within a detention facility such as a prison or jail.*

[BE] CORRIDOR. An enclosed exit access component that defines and provides a path of egress travel.

CORRIDOR, OPEN-ENDED. See "Open-ended corridor."

[BF] CORRIDOR DAMPER. A listed device intended for use where air ducts penetrate or terminate at horizontal openings in the ceilings of fire-resistance-rated corridors, where the corridor ceiling is permitted to be constructed as required for the corridor walls.

[BS] CORROSION RESISTANCE. The ability of a material to withstand deterioration of its surface or its properties when exposed to its environment.

CORROSION RESISTANT. *Capable of maintaining original surface characteristics under the prolonged influence of the use environment.*

[F] CORROSIVE. A chemical that causes visible destruction of, or irreversible alterations in, living tissue by chemical action at the point of contact. A chemical shall be considered corrosive if, when tested on the intact skin of albino rabbits by the method described in DOTn 49 CFR, Part 173.137, such chemical destroys or changes irreversibly the structure of the tissue at the point of contact following an exposure period of 4 hours. This term does not refer to action on inanimate surfaces.

[BG] COURT. An open, uncovered space, unobstructed to the sky, bounded on three or more sides by exterior building walls or other enclosing devices.

COURTHOUSE HOLDING FACILITY. [SFM] *A room, cell, cell complex or building for the confinement of persons for the purpose of a court appearance for a period not to exceed 12 hours.*

COURTROOM DOCK. *An area within a courtroom where persons may be restrained and are awaiting court proceedings.*

[BG] COVERED MALL BUILDING. A single building enclosing a number of tenants and occupants, such as retail stores, drinking and dining establishments, entertainment and amusement facilities, passenger transportation terminals, offices and other similar uses wherein two or more tenants have a main entrance into one or more malls. Anchor buildings shall not be considered as a part of the covered mall building. The term "*covered mall building*" shall include open mall buildings as defined below.

Mall. A roofed or covered common pedestrian area within a covered mall building that serves as access for two or more tenants and not to exceed three levels that are open to each other. The term "mall" shall include open malls as defined below.

Open mall. An unroofed common pedestrian way serving a number of tenants not exceeding three levels. Circulation at levels above grade shall be permitted to include open exterior balconies leading to exits discharging at grade.

Open mall building. Several structures housing a number of tenants, such as retail stores, drinking and dining establishments, entertainment and amusement facilities, offices, and other similar uses, wherein two or more tenants have a main entrance into one or more open malls. Anchor buildings are not considered as a part of the open mall building.

COVERED MULTIFAMILY DWELLINGS. [HCD 1-AC] *"Covered multifamily dwellings" means either of the following:*

1. *Buildings that consist of at least four condominium dwelling units or at least three apartment dwelling units if the buildings have at least one elevator.*
2. *The ground floor dwelling units in buildings that consist of at least four condominium dwelling units or at least three apartment dwelling units if the building does not have an elevator.*

Covered multifamily dwellings include dwellings listed in Section 1102A.1. For purposes of this definition, dwelling units within a single structure separated by firewalls do not constitute separate buildings.

[BS] CRIPPLE WALL. A framed stud wall extending from the top of the foundation to the underside of floor framing for the lowest occupied floor level.

[BS] CRIPPLE WALL CLEAR HEIGHT. The vertical height of a cripple wall from the top of the foundation to the underside of floor framing above.

[F] CRITICAL CIRCUIT. A circuit that requires continuous operation to ensure safety of the structure and occupants.

[BS] CROSS-LAMINATED TIMBER. A prefabricated engineered wood product consisting of not less than three layers of solid-sawn lumber or structural composite lumber where the adjacent layers are cross oriented and bonded with structural adhesive to form a solid wood element.

CROSS SLOPE. *The slope that is perpendicular to the direction of travel.*

[F] CRYOGENIC FLUID. A liquid having a boiling point lower than -150°F (-101°C) at 14.7 pounds per square inch atmosphere (psia) (an absolute pressure of 101 kPa).

CURB CUT. *An interruption of a curb at a pedestrian way, which separates surfaces that are substantially at the same elevation.*

CURB RAMP. *A sloping prepared surface, intended for pedestrian traffic, which provides access between a walk or sidewalk and a surface located above or below an adjacent curb face.*

[BG] CUSTODIAL CARE. Describes persons who receive assistance with day-to-day living tasks such as cooking, taking medication, bathing, using toilet facilities and other tasks of daily living. Custodial care includes persons receiving care who have the ability to respond to emergency situations and may receive limited verbal or physical assistance. These care recipients may evacuate at a slower rate and/or who have mental and psychiatric complications.

CUSTODY STATION. *A desk or platform staffed by one or more custody officers whose purpose is to supervise those in custody.*

[BS] DALLE GLASS. A decorative composite glazing material made of individual pieces of glass that are embedded in a cast matrix of concrete or epoxy.

DAMPER. See "Ceiling radiation damper," "Combination fire/smoke damper," "Corridor damper," "Fire damper" and "Smoke damper."

[BS] DANGEROUS. Any building, structure or portion thereof that meets any of the conditions described below shall be deemed dangerous:

1. The building or structure has collapsed, has partially collapsed, has moved off its foundation or lacks the necessary support of the ground.
2. There exists a significant risk of collapse, detachment or dislodgment of any portion, member, appurtenance or ornamentation of the building or structure under permanent, routine, or frequent loads; under actual loads already in effect; or under snow, wind, rain, flood, earthquake aftershock, or other environmental loads when such loads are imminent.

[BG] DATA CENTER. A room or building, or portions thereof, used primarily to house information technology equipment (ITE) and serving a total ITE load greater than 10 kW and 20 W/ft^2 (215 W/m^2) of conditioned floor area.

[F] DAY BOX. A portable magazine designed to hold explosive materials constructed in accordance with the requirements for a Type 3 magazine as defined and classified in Chapter 56 of the *California Fire Code*.

DAY-CARE. *For the purposes of these regulations, means the care of persons during any period of a 24-hour day where permanent sleeping accommodations are not provided. The time period shall not be more than 24 hours.*

Note: "*Day-care" shall not be construed to preclude the use of cots or mats for napping purposes, provided all employees, attendants and staff personnel are awake and on duty in the area where napping occurs.*

DAY-CARE HOME, FAMILY. *A home that regularly provides care, protection and supervision for 14 or fewer children, in the provider's own home, for periods of less than 24 hours per day, while the parents or guardians are away, and is either a large family day-care home or a small family day-care home.*

DAY-CARE HOME, LARGE FAMILY. *A provider's own home which is licensed to provide day care for periods less than 24 hours per day for nine to 14 persons, including children under the age of 10 years who reside at the home.*

DAY-CARE HOME, SMALL FAMILY. *A home which provides family day-care to eight or fewer children, including children under the age of 10 years who reside at the home, in the provider's own home, for periods of less than 24 hours per day. Small family day-care homes are exempted from state fire and life safety regulations other than those state and local standards applicable to Group R-3 occupancies. (See Health and Safety Code, Section 13143 (b).)*

DAY ROOM. *A room which is adjacent to a cell, or cell tier, or dormitory and which is used as a dining, exercise or other activity room for inmates.*

[BE] DEAD BOLT. Door locking hardware with a bolt that is extended and retracted by action of the lock mechanism (see "Automatic flush bolt," "Constant latching bolt," "Manual bolt").

[BS] DEAD LOAD. The weight of materials of construction incorporated into the building, including but not limited to walls, floors, roofs, ceilings, stairways, built-in partitions, finishes, cladding and other similarly incorporated architectural and structural items, and the weight of fixed service equipment, including cranes and material handling systems.

DECK. *Is an area surrounding a pool which is specifically constructed or installed for use by bathers.*

[BS] DECORATIVE GLAZING. A carved, leaded or Dalle glass or glazing material whose purpose is decorative or artistic, not functional; whose coloring, texture or other design qualities or components cannot be removed without destroying the glazing material and whose surface, or assembly into which it is incorporated, is divided into segments.

[F] DECORATIVE MATERIALS. All materials applied over the building interior finish for decorative, acoustical or other effect including, but not limited to, curtains, draperies, fabrics and streamers; and all other materials utilized for decorative effect including, but not limited to, bulletin boards, artwork, posters, photographs, batting, cloth, cotton, hay, stalks, straw, vines, leaves, trees, moss and similar items, foam plastics and materials containing foam plastics. Decorative materials do not include wall coverings, ceiling coverings, floor coverings, ordinary window shades, interior finish and materials 0.025 inch (0.64 mm) or less in thickness applied directly to and adhering tightly to a substrate.

[BS] DEEP FOUNDATION. A deep foundation is a foundation element that does not satisfy the definition of a shallow foundation.

[BE] DEFEND-IN-PLACE. A method of emergency response that engages building components and trained staff to provide occupant safety during an emergency. Emergency response involves remaining in place, relocating within the building, or both, without evacuating the building.

[A] DEFERRED SUBMITTAL. Those portions of the design that are not submitted at the time of the application and that are to be submitted to the building official within a specified period.

[F] DEFLAGRATION. An exothermic reaction, such as the extremely rapid oxidation of a flammable dust or vapor in air, in which the reaction progresses through the unburned material at a rate less than the velocity of sound. A deflagration can have an explosive effect.

[BF] DELAYED-ACTION CLOSER. A self-closing device that incorporates a delay prior to the initiation of closing. Delayed-action closers are mechanical devices with an adjustable delay.

[F] DELUGE SYSTEM. A sprinkler system employing open sprinklers attached to a piping system connected to a water supply through a valve that is opened by the operation of a detection system installed in the same areas as the sprinklers. When this valve opens, water flows into the piping system and discharges from all sprinklers attached thereto.

DEPARTMENT. [HCD 1 & HCD 2] *The Department of Housing and Community Development.*

[BS] DESIGN EARTHQUAKE GROUND MOTION. The earthquake ground motion that buildings and structures are specifically proportioned to resist in Section 1613.

[BS] DESIGN FLOOD. The flood associated with the greater of the following two areas:

1. Area with a flood plain subject to a 1-percent or greater chance of flooding in any year.
2. Area designated as a flood hazard area on a community's flood hazard map, or otherwise legally designated.

[BS] DESIGN FLOOD ELEVATION. The elevation of the "design flood," including wave height, relative to the datum specified on the community's legally designated flood hazard map. In areas designated as Zone AO, the design flood elevation shall be the elevation of the highest existing grade of the building's perimeter plus the depth number (in feet) specified on the flood hazard map. In areas designated as Zone AO where a depth number is not specified on the map, the depth number shall be taken as being equal to 2 feet (610 mm).

DESIGN PROFESSIONAL, REGISTERED. See "Registered design professional."

DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE, REGISTERED. See "Registered design professional in responsible charge."

[BS] DESIGN STRENGTH. The product of the nominal strength and a resistance factor (or strength reduction factor).

DESIGNATED PUBLIC TRANSPORTATION. [DSA-AC] *Transportation provided by a public entity (other than public school transportation) by bus, rail or other conveyance (other than transportation by aircraft or intercity or commuter rail transportation) that provides the general public with general or special service, including charter service, on a regular and continuing basis.*

[BS] DESIGNATED SEISMIC SYSTEM. Those nonstructural components that require design in accordance with Chapter 13 of ASCE 7 and for which the component importance factor, I_p, is greater than 1 in accordance with Section 13.1.3 of ASCE 7.

DESTINATION-ORIENTED ELEVATOR. [DSA-AC] *Destination-oriented elevators are operated by the user selecting a destination floor at a hall call console located at or near an elevator landing. The destination-oriented elevator system then assigns an elevator car which transports the user to the selected destination floor. Destination-oriented elevators do not provide floor selection within elevator cars.*

[F] DETACHED BUILDING. A separate single-story building, without a basement or crawl space, used for the storage or use of hazardous materials and located an approved distance from all structures.

DETACHED SINGLE-FAMILY DWELLING. [HCD 1 & HCD 2] *Any single-family dwelling which is separated (detached) from adjacent buildings.*

[BS] DETAILED PLAIN CONCRETE STRUCTURAL WALL. See Section 1905.2.

[BE] DETECTABLE WARNING. A standardized surface feature built in or applied to walking surfaces or other elements to warn visually impaired persons of hazards on a circulation path.

[F] DETECTOR, HEAT. A fire detector that senses heat—either abnormally high temperature or rate of rise, or both.

DETENTION ELEVATOR. [SFM] *Detention elevator shall mean an elevator which moves in-custody individuals within a secure and restrained environment.*

DETENTION PROGRAM SUITE. *Within a state prison, correctional treatment facility, local detention facility or juvenile facility, a detention program suite shall be a group of program related spaces, not classified as group F uses, located around shared circulation.*

DETENTION TREATMENT ROOM. [SFM] *Detention treatment room shall mean a lockable room or rooms within Group I-3 occupancies used for recreational therapy, group rooms, interdisciplinary treatment team rooms and interview rooms not classified solely as a Group I-2 occupancy.*

[F] DETONATION. An exothermic reaction characterized by the presence of a shock wave in the material which establishes and maintains the reaction. The reaction zone progresses through the material at a rate greater than the velocity of sound. The principal heating mechanism is one of shock compression. Detonations have an explosive effect.

[BG] DETOXIFICATION FACILITIES. Facilities that provide treatment for substance abuse, serving care recipients who are incapable of self-preservation or who are harmful to themselves or others.

[BS] DIAPHRAGM. A horizontal or sloped system acting to transmit lateral forces to vertical elements of the lateral force-resisting system. When the term "diaphragm" is used, it shall include horizontal bracing systems.

Diaphragm, blocked. In light-frame construction, a diaphragm in which all sheathing edges not occurring on a framing member are supported on and fastened to blocking.

Diaphragm, unblocked. A diaphragm that has edge nailing at supporting members only. Blocking between supporting structural members at panel edges is not included. Diaphragm panels are field nailed to supporting members.

Diaphragm boundary. In light-frame construction, a location where shear is transferred into or out of the diaphragm sheathing. Transfer is either to a boundary element or to another force resisting element.

Diaphragm chord. A diaphragm boundary element perpendicular to the applied load that is assumed to take axial stresses due to the diaphragm moment.

[BS] DIMENSIONS. This definition applies only to Chapter 21.

Nominal. The specified dimension plus an allowance for the joints with which the units are to be laid. Nominal dimensions are usually stated in whole numbers. Thickness is given first, followed by height and then length.

Specified. Dimensions specified for the manufacture or construction of a unit, joint or element.

[BE] DIRECT ACCESS. A path of travel from a space to an immediately adjacent space through an opening in the common wall between the two spaces.

DIRECTIONAL SIGN. [DSA-AC, HCD 1 & HCD 2] *A publicly displayed notice which indicates by use of words or symbols a recommended direction or route of travel.*

DISABILITY. [DSA-AC] *Disability is (1) a physical or mental impairment that limits one or more of the major life activities of an individual, (2) a record of such an impairment, or (3) being regarded as having such an impairment.*

[F] DISPENSING. The pouring or transferring of any material from a container, tank or similar vessel, whereby vapors, dusts, fumes, mists or gases are liberated to the atmosphere.

| | ***DISTANCE FROM AN ACTIVE EARTHQUAKE FAULT. [DSA-SS, DSA-SS/CC, OSHPD 1, 1R, 2, 4 & 5]*** *Distance measured from the nearest point of the building to the closest edge of an Alquist-Priolo Earthquake fault zone for an active fault, if such a map exists, or to the closest mapped splay of the fault.*

DISTRICT AGRICULTURAL ASSOCIATIONS. *Those associations regulated by the California Food and Agricultural Code, Division 3, Part 3.*

DOOR, BALANCED. See "Balanced door."

DOOR, LOW-ENERGY POWER-OPERATED. See "Low-energy power-operated door."

DOOR, POWER-ASSISTED. See "Power-assisted door."

DOOR, POWER-OPERATED. See "Power-operated door."

DOORWAY, EXIT ACCESS. See "Exit access doorway."

[BG] DORMITORY. A space in a building where group sleeping accommodations are provided in one room, or in a series of closely associated rooms, for persons not members of the same family group, under joint occupancy and single management, as in college dormitories or fraternity houses. ***[SFM]*** *For Group I-3 occupancies "Dormitory" is an area occupied by no less than three inmates.*

[BF] DRAFTSTOP. A material, device or construction installed to restrict the movement of air within open spaces of concealed areas of building components such as crawl spaces, floor/ceiling assemblies, roof/ceiling assemblies and attics.

DRAG STRUT. See "Collector."

DRAIN. *A fitting or fixture, usually at or near the bottom of a pool, through which water leaves the pool normally to the recirculation pump.*

[BS] DRILLED SHAFT. A cast-in-place deep foundation element, also referred to as a caisson, drilled pier or bored pile, constructed by drilling a hole (with or without permanent casing or drilling fluid) into soil or rock and filling it with fluid concrete after the drilling equipment is removed.

Socketed drilled shaft. A drilled shaft with a permanent pipe or tube casing that extends down to bedrock and an uncased socket drilled into the bedrock.

| | ***DRIVE AISLE. [DSA-AC]*** *A vehicular way provided within a parking facility that connects vehicular entrances, parking stalls, electric vehicle charging stations, passenger loading zones and vehicular exits.*

| | ***DRIVE-UP ELECTRIC VEHICLE CHARGING STATION. [DSA-AC]*** *An electric vehicle charging station in which use is limited to 30 minutes maximum and is provided at a location where the electric vehicle approaches in the forward direction, stops in the vehicle space, charges the vehicle and proceeds forward to depart the vehicle space. The arrangement of a drive-up electric vehicle charger and its associated vehicle space is similar to a gasoline filling station island.*

| | ***DRIVEWAY. [DSA-AC]*** *A vehicular way providing access between a public way and a building, parking facility, or other off-street area. A driveway may provide access to drive aisles in a parking facility.*

[BS] DRY FLOODPROOFING. A combination of design modifications that results in a building or structure, including the attendant utilities and equipment and sanitary facilities, being watertight with walls substantially impermeable to the passage of water and with structural components having the capacity to resist loads as identified in ASCE 7.

[F] DRY-CHEMICAL EXTINGUISHING AGENT. A powder composed of small particles, usually of sodium bicarbonate, potassium bicarbonate, urea-potassium-based bicarbonate, potassium chloride or monoammonium phosphate, with added particulate material supplemented by special treatment to provide resistance to packing, resistance to moisture absorption (caking) and the proper flow capabilities.

[A] DWELLING. A building that contains one or two dwelling units used, intended or designed to be used, rented, leased, let or hired out to be occupied for living purposes.

[A] DWELLING UNIT. A single unit providing complete, independent living facilities for one or more persons, including permanent provisions for living, sleeping, eating, cooking and sanitation. ***[HCD 1-AC]*** *For the purposes of Chapter 11A, a single unit of residence for a family of one or more persons. Examples of dwelling units covered by Chapter 11A include condominiums, an apartment unit within an apartment building, and other types of dwellings in which sleeping accommodations are provided but toileting or cooking facilities are shared by occupants of more than one room or portion of the dwelling. Examples of the latter include dormitory rooms and sleeping accommodations in shelters intended for occupancy as residences for homeless persons.*

[BG] DWELLING UNIT, EFFICIENCY. A dwelling unit where all permanent provisions for living, sleeping, eating and cooking are contained in a single room.

DWELLING UNIT OR SLEEPING UNIT, MULTISTORY. See "Multistory unit."

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EFFECTIVE PARTICLE SIZE. *The theoretical size of a sieve in mm that will pass 10 percent by weight of sand.*

EFFICIENCY DWELLING UNIT. [HCD 1] *A dwelling unit constructed in accordance with Health and Safety Code Section 17958.1 or the California Building Code Section 1208.4.*

[BE] EGRESS COURT. A court or yard which provides access to a public way for one or more exits.

ELECTRIC VEHICLE (EV). [DSA-AC & SFM] *An automotive-type vehicle for on-road use, such as passenger automobiles, buses, trucks, vans, neighborhood electric vehicles, electric motorcycles and the like, primarily powered by an electric motor that draws current from a rechargeable storage battery, fuel cell, photovoltaic array or other source of electric current. Plug-in hybrid electric vehicles (PHEV) are considered electric vehicles. For the purpose of this code, off-road, self-propelled electric vehicles, such as industrial trucks, hoists, lifts, transports, golf carts, airline ground support equipment, tractors, boats and the like, are not included.*

ELECTRIC VEHICLE (EV) CHARGER. [DSA-AC] *Off-board charging equipment used to charge an electric vehicle.*

ELECTRIC VEHICLE CHARGING SPACE (EV Space). [DSA-AC] *A space intended for charging electric vehicles.*

ELECTRIC VEHICLE CHARGING STATION (EVCS). [DSA-AC] *One or more electric vehicle charging spaces served by an electric vehicle charger or other charging equipment. Where a multiport electric vehicle charger can simultaneously charge more than one vehicle, the number of electric vehicle charging stations shall be considered equivalent to the number of electric vehicles that can be simultaneously charged.*

ELECTRIC VEHICLE (EV) CONNECTOR. [DSA-AC] *A device that, when electrically coupled (conductive or inductive) to an electric vehicle inlet, establishes an electrical connection to the electric vehicle for the purpose of power transfer and information exchange. This device is part of the electric vehicle coupler.*

[BG] ELECTRIC VEHICLE CHARGING STATION. One or more vehicle spaces served by an electric vehicle charging system.

[BF] ELECTRICAL CIRCUIT PROTECTIVE SYSTEM. A specific construction of devices, materials, or coatings installed as a fire-resistive barrier system applied to electrical system components, such as cable trays, conduits and other raceways, open run cables and conductors, cables, and conductors.

ELEMENT. [DSA-AC] *An architectural or mechanical component of a building, facility, space or site.*

ELEVATED PLAY COMPONENT. [DSA-AC] *A play component that is approached above or below grade and that is part of a composite play structure consisting of two or more play components attached or functionally linked to create an integrated unit providing more than one play activity.*

[F] ELEVATOR GROUP. A grouping of elevators in a building located adjacent or directly across from one another that responds to common hall call buttons.

ELEVATOR, PASSENGER. [HCD 1 & HCD 2] *See "PASSENGER ELEVATOR."* ***[DSA-AC]*** *An elevator used primarily to carry passengers.*

[F] EMERGENCY ALARM SYSTEM. A system to provide indication and warning of emergency situations involving hazardous materials.

[F] EMERGENCY CONTROL STATION. An approved location on the premises where signals from emergency equipment are received and which is staffed by trained personnel.

[BE] EMERGENCY ESCAPE AND RESCUE OPENING. An operable exterior window, door or other similar device that provides for a means of escape and access for rescue in the event of an emergency.

[F] EMERGENCY POWER SYSTEM. A source of automatic electric power of a required capacity and duration to operate required life safety, fire alarm, detection and ventilation systems in the event of a failure of the primary power. Emergency power systems are required for electrical loads where interruption of the primary power could result in loss of human life or serious injuries.

[F] EMERGENCY VOICE/ALARM COMMUNICATIONS. Dedicated manual or automatic facilities for originating and distributing voice instructions, as well as alert and evacuation signals pertaining to a fire emergency, to the occupants of a building.

[BF] EMITTANCE. The ratio of radiant heat flux emitted by a specimen to that emitted by a blackbody at the same temperature and under the same conditions.

[BE] EMPLOYEE WORK AREA. All or any portion of a space used only by employees and only for work. Corridors, toilet rooms, kitchenettes and break rooms are not employee work areas.

ENFORCEMENT. [HCD 1 & HCD 2] *The applicable section of the Health and Safety Code is repeated here for clarity and reads as follows:*

> ***Section 17920****. "Enforcement" means diligent effort to secure compliance, including review of plans and permit applications, response to complaints, citation of violations and other legal process. Except as otherwise provided in this part, "enforcement" may, but need not, include inspections of existing buildings on which no complaint or permit application has been filed, and effort to secure compliance as to these existing buildings.*

ENFORCEMENT AGENT. [DSA-SS, DSA-SS/CC & OSHPD 1, 1R, 2, 4 & 5] *That individual within the agency or organization charged with responsibility for agency or organization compliance with the requirements of this Code. Used interchangeably with Building Official and Code Official.*

ENFORCING AGENCY. *The designated department or agency as specified by statute or regulation.*

[F] ENERGY STORAGE SYSTEM, ELECTROCHEMICAL. An energy storage system that stores energy and produces electricity using chemical reactions. It includes, among others, battery ESS and capacitor ESS.

[BS] ENGINEERED WOOD RIM BOARD. A full-depth structural composite lumber, wood structural panel, structural glued laminated timber or prefabricated wood I-joist member designed to transfer horizontal (shear) and vertical (compression) loads, provide attachment for diaphragm sheathing, siding and exterior deck ledgers, and provide lateral support at the ends of floor or roof joists or rafters.

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ENTRANCE. [HCD 1, HCD 2, HCD-1/AC and DSA-AC] *Any access point to a building or portion of a building or facility used for the purpose of entering. An entrance includes the approach walk, the vertical access leading to the entrance platform, the entrance platform itself, vestibule if provided, the entry door or gate, and the hardware of the entry door or gate.*

ENTRANCE, PUBLIC. See "Public entrance."

ENTRANCE, RESTRICTED. See "Restricted entrance."

ENTRANCE, SERVICE. See "Service entrance."

EQUIPMENT. [DSA-SS, DSA-SS/CC, OSHPD 1, 2, 4 & 5] *Equipment as used in this part and all applicable parts of the California Building Standards Code shall be classified as fixed equipment, mobile, movable, countertop, interim, temporary or other equipment.*

(1) ***COUNTERTOP EQUIPMENT [DSA-SS, DSA-SS/CC, OSHPD 1, 2, 4 & 5]*** *means equipment that typically remains on countertop, work bench, shelf or support other than the floor during its service life.*

(2) ***ESSENTIAL EQUIPMENT [OSHPD 1, 2, 4 & 5]*** *means equipment whose failure will significantly impair operations during or after a disaster. The facility shall determine which equipment is essential. Essential equipment shall also include equipment that is required to provide the eight basic services of the hospital as defined in Section 1224.3.*

ESSENTIAL EQUIPMENT [DSA-SS, DSA-SS/CC] *means equipment whose failure will significantly impair operations during or after a disaster for emergency preparedness, communications and operations centers, and other facilities required for emergency response of state-owned essential services buildings, as defined in the California Administrative Code (Title 24, Part 1, CCR) Section 4-207, and all structures required for their continuous operation or access/egress.*

(3) ***FIXED EQUIPMENT [DSA-SS, DSA-SS/CC, OSHPD 1, 2, 4 & 5]*** *means equipment that is directly attached to the building or directly connected to a service distribution system/utility and that typically remains in one fixed location during its service life or use.*

(4) ***INTERIM EQUIPMENT [OSHPD 1, 2, 4 & 5]*** *means equipment that will be in use for the duration of the need for the equipment, not to exceed the duration of the construction project that it is related to.*

(5) ***MOBILE EQUIPMENT [DSA-SS, DSA-SS/CC, OSHPD 1, 2, 4 & 5]*** *means equipment, with or without wheels or rollers, that is typically used in a different location than where it is stored and moved from one location in the building to another during ordinary use.*

(6) ***MOVABLE EQUIPMENT [DSA-SS, DSA-SS/CC, OSHPD 1, 2, 4 & 5]*** *means fixed equipment that is directly attached to the building and/or directly connected to a service distribution system/utility, with or without wheels or rollers, that typically remains in one fixed location during its service life or use but is required to be periodically moved to facilitate cleaning or maintenance.*

(7) ***OTHER EQUIPMENT [DSA-SS, DSA-SS/CC, OSHPD 1, 2, 4 & 5]*** *means equipment that is not directly connected to a building service distribution system, with or without wheels or rollers, and is typically used at a single location during its service life.*

(8) ***TEMPORARY EQUIPMENT [OSHPD 1, 2, 4 & 5]*** *means fixed, movable, countertop or other equipment that is used during replacement, maintenance or repair for a time of service as defined in Section 108.*

EQUIPMENT AREA. *An area used for pool recirculation and purification equipment and related piping appurtenances.*

[BG] EQUIPMENT PLATFORM. An unoccupied, elevated platform used exclusively for mechanical systems or industrial process equipment, including the associated elevated walkways, stairways, alternating tread devices and ladders necessary to access the platform (see Section 505.3).

EQUIVALENT FACILITATION. *The use of designs, products or technologies as alternatives to those prescribed, resulting in substantially equivalent or greater accessibility and usability.*

Note: *In determining equivalent facilitation, consideration shall be given to means that provide for the maximum independence of persons with disabilities while presenting the least risk of harm, injury or other hazard to such persons or others.*

[BS] ESSENTIAL FACILITIES. Buildings and other structures that are intended to remain operational in the event of extreme environmental loading from flood, wind, tornadoes, snow or earthquakes.

[F] EXHAUSTED ENCLOSURE. An appliance or piece of equipment that consists of a top, a back and two sides providing a means of local exhaust for capturing gases, fumes, vapors and mists. Such enclosures include laboratory hoods, exhaust fume hoods and similar appliances and equipment used to locally retain and exhaust the gases, fumes, vapors and mists that could be released. Rooms or areas provided with general ventilation, in themselves, are not exhausted enclosures.

[A] EXISTING BUILDING. A building erected prior to the date of adoption of the appropriate code, or one for which a legal building permit has been issued.

EXISTING BUILDING OR FACILITY. [DSA-AC] *A facility in existence on any given date, without regard to whether the facility may also be considered newly constructed or altered under this code.*

[A] EXISTING STRUCTURE. A structure erected prior to the date of adoption of the appropriate code, or one for which a legal building permit has been issued.

[BE] EXIT. That portion of a means of egress system between the exit access and the exit discharge or public way. Exit components include exterior exit doors at the level of exit discharge, interior exit stairways and ramps, exit passageways, exterior exit stairways and ramps and horizontal exits.

EXIT, HORIZONTAL. See "Horizontal exit."

[BE] EXIT ACCESS. That portion of a means of egress system that leads from any occupied portion of a building or structure to an exit.

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[BE] EXIT ACCESS DOORWAY. A door or access point along the path of egress travel from an occupied room, area or space where the path of egress enters an intervening room, corridor, exit access stairway or ramp.

[BE] EXIT ACCESS RAMP. A ramp within the exit access portion of the means of egress system.

[BE] EXIT ACCESS STAIRWAY. A stairway within the exit access portion of the means of egress system.

[BE] EXIT DISCHARGE. That portion of a means of egress system between the termination of an exit and a public way.

[BE] EXIT DISCHARGE, LEVEL OF. The story at the point at which an exit terminates and an exit discharge begins.

[BE] EXIT PASSAGEWAY. An exit component that is separated from other interior spaces of a building or structure by fire-resistance-rated construction and opening protectives, and provides for a protected path of egress travel in a horizontal direction to an exit or to the exit discharge.

[BF] EXPANDED VINYL WALL COVERING. Wall covering consisting of a woven textile backing, an expanded vinyl base coat layer and a nonexpanded vinyl skin coat. The expanded base coat layer is a homogeneous vinyl layer that contains a blowing agent. During processing, the blowing agent decomposes, causing this layer to expand by forming closed cells. The total thickness of the wall covering is approximately 0.055 inch to 0.070 inch (1.4 mm to 1.78 mm).

[F] EXPLOSION. An effect produced by the sudden violent expansion of gases, which may be accompanied by a shock wave or disruption, or both, of enclosing materials or structures. An explosion could result from any of the following:

1. Chemical changes such as rapid oxidation, deflagration or detonation, decomposition of molecules and runaway polymerization (usually detonations).
2. Physical changes such as pressure tank ruptures.
3. Atomic changes (nuclear fission or fusion).

[F] EXPLOSIVE. A chemical compound, mixture or device, the primary or common purpose of which is to function by explosion. The term includes, but is not limited to: dynamite, black powder, pellet powder, initiating explosives, detonators, safety fuses, squibs, detonating cord, igniter cord, and igniters. The term "explosive" includes any material determined to be within the scope of USC Title 18: Chapter 40 and also includes any material classified as an explosive other than consumer fireworks, 1.4G by the hazardous materials regulations of DOTn 49 CFR Parts 100-185.

High explosive. Explosive material, such as dynamite, which can be caused to detonate by means of a No. 8 test blasting cap when unconfined.

Low explosive. Explosive material that will burn or deflagrate when ignited. It is characterized by a rate of reaction that is less than the speed of sound. Examples of low explosives include, but are not limited to: black powder; safety fuse; igniters; igniter cord; fuse lighters; fireworks; and propellants, 1.3C.

Mass-detonating explosives. Division 1.1, 1.2 and 1.5 explosives alone or in combination, or loaded into various types of ammunition or containers, most of which can be expected to explode virtually instantaneously when a small portion is subjected to fire, severe concussion, impact, the impulse of an initiating agent or the effect of a considerable discharge of energy from without. Materials that react in this manner represent a mass explosion hazard. Such an explosive will normally cause severe structural damage to adjacent objects. Explosive propagation could occur immediately to other items of ammunition and explosives stored sufficiently close to and not adequately protected from the initially exploding pile with a time interval short enough so that two or more quantities must be considered as one for quantity-distance purposes.

UN/DOTn Class 1 explosives. The former classification system used by DOTn included the terms "high" and "low" explosives as defined herein. The following terms further define explosives under the current system applied by DOTn for all explosive materials defined as hazard Class 1 materials. Compatibility group letters are used in concert with the division to specify further limitations on each division noted (i.e., the letter G identifies the material as a pyrotechnic substance or article containing a pyrotechnic substance and similar materials).

Division 1.1. Explosives that have a mass explosion hazard. A mass explosion is one which affects almost the entire load instantaneously.

Division 1.2. Explosives that have a projection hazard but not a mass explosion hazard.

Division 1.3. Explosives that have a fire hazard and either a minor blast hazard or a minor projection hazard or both, but not a mass explosion hazard.

Division 1.4. Explosives that pose a minor explosion hazard. The explosive effects are largely confined to the package and no projection of fragments of appreciable size or range is to be expected. An external fire must not cause virtually instantaneous explosion of almost the entire contents of the package.

Division 1.5. Very insensitive explosives. This division is comprised of substances that have a mass explosion hazard, but that are so insensitive there is very little probability of initiation or of transition from burning to detonation under normal conditions of transport.

Division 1.6. Extremely insensitive articles which do not have a mass explosion hazard. This division is comprised of articles that contain only extremely insensitive detonating substances and which demonstrate a negligible probability of accidental initiation or propagation.

[BE] EXTERIOR EXIT RAMP. An exit component that serves to meet one or more means of egress design requirements, such as required number of exits or exit access travel distance, and is open to yards, courts or public ways.

[BE] EXTERIOR EXIT STAIRWAY. An exit component that serves to meet one or more means of egress design requirements, such as required number of exits or exit access travel distance, and is open to yards, courts or public ways.

[BF] EXTERIOR INSULATION AND FINISH SYSTEMS (EIFS). EIFS are nonstructural, nonload-bearing, exterior wall cladding systems that consist of an insulation board attached either adhesively or mechanically, or both, to the substrate; an integrally reinforced base coat and a textured protective finish coat.

[BF] EXTERIOR INSULATION AND FINISH SYSTEMS (EIFS) WITH DRAINAGE. An EIFS that incorporates a means of drainage applied over a water-resistive barrier.

[BF] EXTERIOR SURFACES. Weather-exposed surfaces.

[BF] EXTERIOR WALL. A wall, bearing or nonbearing, that is used as an enclosing wall for a building, other than a fire wall, and that has a slope of 60 degrees (1.05 rad) or greater with the horizontal plane.

[BF] EXTERIOR WALL ASSEMBLY. A system including the exterior wall covering, framing, and components such as weather-resistive barriers and insulating materials. This system provides protection of the building structural members and conditioned interior space from the detrimental effects of the exterior environment.

[BF] EXTERIOR WALL COVERING. A material or assembly of materials applied on the exterior side of exterior walls for the purpose of providing a weather-resisting barrier, insulation or for aesthetics, including but not limited to, veneers, siding, exterior insulation and finish systems, rainscreen systems, architectural trim and embellishments such as cornices, soffits, fascias, gutters and leaders.

[BF] F RATING. The time period that the through-penetration firestop system, perimeter fire containment system or continuity head-of-wall system limits the spread of fire through the penetration or void.

[BF] FABRIC PARTITION. A partition consisting of a finished surface made of fabric, without a continuous rigid backing, that is directly attached to a framing system in which the vertical framing members are spaced greater than 4 feet (1219 mm) on center.

[BS] FABRICATED ITEM. Structural, load-bearing or lateral load-resisting members or assemblies consisting of materials assembled prior to installation in a building or structure, or subjected to operations such as heat treatment, thermal cutting, cold working or reforming after manufacture and prior to installation in a building or structure. Materials produced in accordance with standards referenced by this code, such as rolled structural steel shapes, steel reinforcing bars, masonry units and wood structural panels, or in accordance with a referenced standard that provides requirements for quality control done under the supervision of a third-party quality control agency, are not "fabricated items."

[F] FABRICATION AREA. An area within a semiconductor fabrication facility and related research and development areas in which there are processes using hazardous production materials. Such areas are allowed to include ancillary rooms or areas such as dressing rooms and offices that are directly related to the fabrication area processes.

[A] FACILITY. All or any portion of buildings, structures, site improvements, elements and pedestrian or vehicular routes located on a site. ***[DSA-AC]*** *All or any portion of buildings, structures, site improvements, elements, and pedestrian routes or vehicular ways located on a site.*

[BS] FACTORED LOAD. The product of a nominal load and a load factor.

FAMILY. [HCD 1] *An individual or two or more persons who are related by blood or marriage; or otherwise live together in a dwelling unit.*

[BS] FENESTRATION. Products classified as either vertical fenestration or skylights and sloped glazing, installed in such a manner as to preserve the weather-resistant barrier of the wall or roof in which they are installed. Fenestration includes products with glass or other transparent or translucent materials.

[BS] FENESTRATION, VERTICAL. Windows that are fixed or movable, opaque doors, glazed doors, glazed block and combination opaque and glazed doors installed in a wall at less than 15 degrees from the vertical.

[BS] FIBERBOARD. A fibrous, homogeneous panel made from lignocellulosic fibers (usually wood or cane) and having a density of less than 31 pounds per cubic foot (pcf) (497 kg/m^3) but more than 10 pcf (160 kg/m^3).

[BS] FIBER-CEMENT (BACKER BOARD, SIDING, SOFFIT, TRIM AND UNDERLAYMENT) PRODUCTS. Manufactured thin section composites of hydraulic cementitious matrices and discrete nonasbestos fibers.

[BF] FIBER-REINFORCED POLYMER. A polymeric composite material consisting of reinforcement fibers, such as glass, impregnated with a fiber-binding polymer which is then molded and hardened. Fiber-reinforced polymers are permitted to contain cores laminated between fiber-reinforced polymer facings.

FIELD NAILING. See "Nailing, field."

FIRE ALARM BOX, MANUAL. See "Manual fire alarm box."

[F] FIRE ALARM CONTROL UNIT. A system component that receives inputs from automatic and manual fire alarm devices and may be capable of supplying power to detection devices and transponders or off-premises transmitters. The control unit may be capable of providing a transfer of power to the notification appliances and transfer of condition to relays or devices.

[F] FIRE ALARM SIGNAL. A signal initiated by a fire alarm-initiating device such as a manual fire alarm box, automatic fire detector, waterflow switch or other device whose activation is indicative of the presence of a fire or fire signature.

[F] FIRE ALARM SYSTEM. A system or portion of a combination system consisting of components and circuits arranged to monitor and annunciate the status of fire alarm or supervisory signal-initiating devices and to initiate the appropriate response to those signals.

FIRE APPLIANCE. [SFM] *The apparatus or equipment provided or installed for use in the event of an emergency.*

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[BF] FIRE AREA. The aggregate floor area enclosed and bounded by fire walls, fire barriers, exterior walls or horizontal assemblies of a building. Areas of the building not provided with surrounding walls shall be included in the fire area if such areas are included within the horizontal projection of the roof or floor next above.

[BF] FIRE BARRIER. A fire-resistance-rated wall assembly of materials designed to restrict the spread of fire in which continuity is maintained.

[F] FIRE COMMAND CENTER. The principal attended or unattended location where the status of detection, alarm communications and control systems is displayed, and from which the systems can be manually controlled.

[BF] FIRE DAMPER. A listed device installed in ducts and air transfer openings designed to close automatically upon detection of heat and resist the passage of flame. Fire dampers are classified for use in either static systems that will automatically shut down in the event of a fire, or in dynamic systems that continue to operate during a fire. A dynamic fire damper is tested and rated for closure under elevated temperature airflow.

[F] FIRE DETECTOR, AUTOMATIC. A device designed to detect the presence of a fire signature and to initiate action.

[BF] FIRE DOOR. The door component of a fire door assembly.

[BF] FIRE DOOR ASSEMBLY. Any combination of a fire door, frame, hardware and other accessories that together provide a specific degree of fire protection to the opening.

FIRE DOOR ASSEMBLY, FLOOR. See “Floor fire door assembly.”

[BF] FIRE EXIT HARDWARE. Panic hardware that is listed for use on fire door assemblies.

[F] FIRE LANE. A road or other passageway developed to allow the passage of fire apparatus. A fire lane is not necessarily intended for vehicular traffic other than fire apparatus.

[BF] FIRE PARTITION. A vertical assembly of materials designed to restrict the spread of fire in which openings are protected.

[BF] FIRE PROTECTION RATING. The period of time that an opening protective prevents or retards the passage of excessive flames to confine a fire as determined by tests specified in Section 716. Ratings are stated in hours or minutes.

[F] FIRE PROTECTION SYSTEM. Approved devices, equipment and systems or combinations of systems used to detect a fire, activate an alarm, extinguish or control a fire, control or manage smoke and products of a fire or any combination thereof.

[BF] FIRE PROTECTIVE CURTAIN ASSEMBLY. An assembly consisting of a fabric curtain, a bottom bar, guides, a coil, and an operating and closing system.

[BF] FIRE RESISTANCE. That property of materials or their assemblies that prevents or retards the passage of excessive heat, hot gases or flames under conditions of use.

[F] FIRE SAFETY FUNCTIONS. Building and fire control functions that are intended to increase the level of life safety for occupants or to control the spread of harmful effects of fire.

[BF] FIRE SEPARATION DISTANCE. The distance measured from the building face to one of the following:

1. The closest interior lot line.
2. To the centerline of a street, an alley or public way.
3. To an imaginary line between two buildings on the lot.

The distance shall be measured at right angles from the face of the wall.

[BF] FIRE WALL. A fire-resistance-rated wall having protected openings, which restricts the spread of fire and extends continuously from the foundation to or through the roof, with sufficient structural stability under fire conditions to allow collapse of construction on either side without collapse of the wall.

[BF] FIRE WINDOW ASSEMBLY. A window constructed and glazed to give protection against the passage of fire.

[BF] FIREBLOCKING. Building materials, or materials approved for use as fireblocking, installed to resist the free passage of flame to other areas of the building through concealed spaces.

[M] FIREPLACE. A hearth and fire chamber or similar prepared place in which a fire may be made and which is built in conjunction with a chimney.

[BS] FIREPLACE THROAT. The opening between the top of the firebox and the smoke chamber.

[BF] FIRE-RATED GLAZING. Glazing with either a fire protection rating or a fire-resistance rating.

[BF] FIRE-RESISTANCE RATING. The period of time a building element, component or assembly maintains the ability to confine a fire, continues to perform a given structural function, or both, as determined by the tests, or the methods based on tests, prescribed in Section 703.

[BF] FIRE-RESISTANT JOINT SYSTEM. An assemblage of specific materials or products that are designed, tested and fire-resistance rated in accordance with either ASTM E1966 or UL 2079 to resist for a prescribed period of time the passage of fire through joints made in or between fire-resistance-rated assemblies.

[BS] FIRE-RETARDANT-TREATED WOOD. Wood products that, when impregnated with chemicals by a pressure process or other means during manufacture, exhibit reduced surface-burning characteristics and resist propagation of fire.

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FIRE-SMOKE BARRIER. [SFM] *A fire-resistance-rated wall assembly of materials designed to restrict the spread of fire in which continuity is maintained in accordance with Section 707 and that is designed and constructed to restrict the movement of smoke in accordance with Section 710.*

FIRESTOP, MEMBRANE-PENETRATION. See "Membrane-penetration firestop."

FIRESTOP, PENETRATION. See "Penetration firestop."

FIRESTOP SYSTEM, THROUGH-PENETRATION. See "Through-penetration firestop system."

[F] FIREWORKS. Any composition or device for the purpose of producing a visible or audible effect for entertainment purposes by combustion, deflagration or detonation that meets the definition of 1.4G fireworks or 1.3G fireworks.

Fireworks, 1.3G. Large fireworks devices, which are explosive materials, intended for use in fireworks displays and designed to produce audible or visible effects by combustion, deflagration or detonation. Such 1.3G fireworks include, but are not limited to, firecrackers containing more than 130 milligrams (2 grains) of explosive composition, aerial shells containing more than 40 grams of pyrotechnic composition, and other display pieces which exceed the limits for classification as 1.4G fireworks. Such 1.3G fireworks are also described as fireworks, UN0335 by the DOTn.

Note: *Fireworks shall have the same meaning as defined in Health and Safety Code Section 12511 and 12512 which has been reprinted as follows:*

12511. "Fireworks" means any device containing chemical elements and chemical compounds capable of burning independently of the oxygen of the atmosphere and producing audible, visual, mechanical or thermal effects which are useful as pyrotechnic devices or for entertainment.

The term "fireworks" includes, but is not limited to, devices designated by the manufacturer as fireworks, torpedoes, skyrockets, roman candles, rockets, Daygo bombs, sparklers, party poppers, paper caps, chasers, fountains, smoke sparks, aerial bombs and fireworks kits.

12512. "Fireworks kit" means any assembly of materials or explosive substances, which is designed and intended by the seller to be assembled by the person receiving such material or explosive substance and when so assembled would come within the definition of fireworks in Section 12511.

Fireworks, 1.4G. Small fireworks devices containing restricted amounts of pyrotechnic composition designed primarily to produce visible or audible effects by combustion or deflagration that complies with the construction, chemical composition and labeling regulations of the DOTn for fireworks, UN0336, and the US Consumer Product Safety Commission (CPSC) as set forth in CPSC 16 CFR: Parts 1500 and 1507.

[BG] FIXED BASE OPERATOR (FBO). A commercial business granted the right by the airport sponsor to operate on an airport and provide aeronautical services, such as fueling, hangaring, tie-down and parking, aircraft rental, aircraft maintenance and flight instruction.

[BE] FIXED SEATING. Furniture or fixture designed and installed for the use of sitting and secured in place including bench-type seats and seats with or without backs or armrests.

[BF] FLAME SPREAD. The propagation of flame over a surface.

[BF] FLAME SPREAD INDEX. A comparative measure, expressed as a dimensionless number, derived from visual measurements of the spread of flame versus time for a material tested in accordance with ASTM E84 or UL 723.

[F] FLAMMABLE GAS. A material that is a gas at 68°F (20°C) or less at 14.7 pounds per square inch atmosphere (psia) (101 kPa) of pressure [a material that has a boiling point of 68°F (20°C) or less at 14.7 psia (101 kPa)] subdivided as follows:

1. Category 1A. A gas that meets either of the following:
   1.1. *A gas which is* ignitable at 14.7 psia (101 kPa) when in a mixture of 13 percent or less by volume with air.
   1.2. *A gas with* a flammable range at 14.7 psia (101 kPa) with air of at least 12 percent, regardless of the lower limit, unless data shows compliance with Category 1B.
2. Category 1B. A gas which meets the flammability criteria for Category 1A, is not pyrophoric or chemically unstable, and meets one or more of the following:
   2.1. A lower flammability limit of more than 6 percent by volume of air.
   2.2. A fundamental burning velocity of less than 3.9 inches/second (99 mm/s).

The limits specified shall be determined at 14.7 psi (101 kPa) of pressure and a temperature of 68°F (20°C) in accordance with ASTM E681.

Where not otherwise specified, the term "flammable gas" includes both Category 1A and 1B.

[F] FLAMMABLE LIQUEFIED GAS. A liquefied compressed gas which, under a charged pressure, is partially liquid at a temperature of 68°F (20°C) and which is flammable.

[F] FLAMMABLE LIQUID. A liquid having a closed cup flash point below 100°F (38°C). Flammable liquids are further categorized into a group known as Class I liquids. The Class I category is subdivided as follows:

Class IA. Liquids having a flash point below 73°F (23°C) and a boiling point below 100°F (38°C).

Class IB. Liquids having a flash point below 73°F (23°C) and a boiling point at or above 100°F (38°C).

Class IC. Liquids having a flash point at or above 73°F (23°C) and below 100°F (38°C). The category of flammable liquids does not include compressed gases or cryogenic fluids, or liquids that do not have a fire point when tested in accordance with ASTM D92.

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[F] FLAMMABLE MATERIAL. A material capable of being readily ignited from common sources of heat or at a temperature of 600°F (316°C) or less.

[F] FLAMMABLE SOLID. A solid, other than a blasting agent or explosive, that is capable of causing fire through friction, absorption or moisture, spontaneous chemical change, or retained heat from manufacturing or processing, or which has an ignition temperature below 212°F (100°C) or which burns so vigorously and persistently when ignited as to create a serious hazard. A chemical shall be considered a flammable solid as determined in accordance with the test method of CPSC 16 CFR; Part 1500.44, if it ignites and burns with a self-sustained flame at a rate greater than 0.1 inch (2.5 mm) per second along its major axis.

[F] FLAMMABLE VAPORS OR FUMES. The concentration of flammable constituents in air that exceeds 25 percent of their lower flammable limit (LFL).

[F] FLASH POINT. The minimum temperature in degrees Fahrenheit at which a liquid will give off sufficient vapors to form an ignitable mixture with air near the surface or in the container but will not sustain combustion. The flash point of a liquid shall be determined by appropriate test procedure and apparatus as specified in ASTM D56, ASTM D93 or ASTM D3278.

[BE] FLIGHT. A continuous run of rectangular treads, winders or combination thereof from one landing to another.

FLOOD, DESIGN. See "Design flood."

[BS] FLOOD DAMAGE-RESISTANT MATERIALS. Any construction material capable of withstanding direct and prolonged contact with floodwaters without sustaining any damage that requires more than cosmetic repair.

FLOOD ELEVATION, DESIGN. See "Design flood elevation."

[BS] FLOOD HAZARD AREA. The greater of the following two areas:

1. The area within a flood plain subject to a 1-percent or greater chance of flooding in any year.
2. The area designated as a flood hazard area on a community's flood hazard map, or otherwise legally designated.

FLOOD HAZARD AREAS, SPECIAL. See "Special flood hazard area."

[BS] FLOOD INSURANCE RATE MAP (FIRM). An official map of a community on which the Federal Emergency Management Agency (FEMA) has delineated both the special flood hazard areas and the risk premium zones applicable to the community.

[BS] FLOOD INSURANCE STUDY. The official report provided by the Federal Emergency Management Agency containing the *Flood Insurance Rate Map* (*FIRM*), the Flood Boundary and *Floodway* Map (FBFM), the water surface elevation of the base flood and supporting technical data.

[BS] FLOOD or FLOODING. A general and temporary condition of partial or complete inundation of normally dry land from:

1. The overflow of inland or tidal waters.
2. The unusual and rapid accumulation or runoff of surface waters from any source.

[BS] FLOODWAY. The channel of the river, creek or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height.

[BE] FLOOR AREA, GROSS. The floor area within the inside perimeter of the exterior walls of the building under consideration, exclusive of vent shafts and courts, without deduction for corridors, stairways, ramps, closets, the thickness of interior walls, columns or other features. The floor area of a building, or portion thereof, not provided with surrounding exterior walls shall be the usable area under the horizontal projection of the roof or floor above. The gross floor area shall not include shafts with no openings or interior courts.

[BE] FLOOR AREA, NET. The actual occupied area not including unoccupied accessory areas such as corridors, stairways, ramps, toilet rooms, mechanical rooms and closets.

[BF] FLOOR FIRE DOOR ASSEMBLY. A combination of a fire door, a frame, hardware and other accessories installed in a horizontal plane, which together provide a specific degree of fire protection to a through-opening in a fire-resistance-rated floor (see Section 712.1.13.1).

[BF] FOAM PLASTIC INSULATION. A plastic that is intentionally expanded by the use of a foaming agent to produce a reduced-density plastic containing voids consisting of open or closed cells distributed throughout the plastic for thermal insulating or acoustical purposes and that has a density less than 20 pounds per cubic foot (pcf) (320 kg/m^3).

[F] FOAM-EXTINGUISHING SYSTEM. A special system discharging a foam made from concentrates, either mechanically or chemically, over the area to be protected.

[BE] FOLDING AND TELESCOPIC SEATING. Tiered seating having an overall shape and size that is capable of being reduced for purposes of moving or storing and is not a building element.

[BG] FOOD COURT. A public seating area located in the mall that serves adjacent food preparation tenant spaces.

[BG] FOSTER CARE FACILITIES. Facilities that provide care to more than five children, $2^1/_2$ years of age or less.

[BS] FOUNDATION PIER. This definition applies only to Chapter 21.

An isolated vertical foundation member whose horizontal dimension measured at right angles to its thickness does not exceed three times its thickness and whose height is equal to or less than four times its thickness.

[BS] FRAME STRUCTURE. A building or other structure in which vertical loads from floors and roofs are primarily supported by columns.

> ***FREESTANDING ACUTE PSYCHIATRIC BUILDING (APB). [OSHPD 5]*** *A freestanding building that provides 24-hour inpatient Acute Psychiatric Services as defined in the Health and Safety Code (H&SC) Section 1250(b) or as special services in accordance with H&SC Section 1255(a)(5) of a general acute care hospital defined in H&SC Section 1250(a) and all structures, equipment and services required for their operation or access/egress.*

FREESTANDING BUILDING OR STRUCTURE. [OSHPD 1, 1R, 2, 4 & 5] *A building or structure that is freestanding, as defined in the California Administrative Code Section 7-111, and is separated from any adjacent buildings or structures that meet the following criteria:*

1. *Structural separations comply with the applicable provisions of this code.*
2. *Fire-resistance-rated construction separations comply with the applicable provisions of the California Building Standards code.*
3. *Buildings on the same lot comply with the height and area limitations of this code.*

> ***FREESTANDING SKILLED NURSING BUILDING (SNB). [OSHPD 2]*** *A freestanding building that provides skilled nursing and/or intermediate care as defined in the Health and Safety Code Section 1250(c) or (d), and all structures, equipment and services required for their operation or access/egress.*

[F] FUEL CELL POWER SYSTEM, STATIONARY. A stationary energy-generation system that converts the chemical energy of a fuel and oxidant to electric energy (DC or AC electricity) by an electrochemical process.

Field-fabricated fuel cell power system. A stationary fuel cell power system that is assembled at the job site and is not a preengineered or prepackaged factory-assembled fuel cell power system.

Preengineered fuel cell power system. A stationary fuel cell power system consisting of components and modules that are produced in a factory and shipped to the job site for assembly.

Prepackaged fuel cell power system. A stationary fuel cell power system that is factory assembled as a single, complete unit and shipped as a complete unit for installation at the job site.

FULL-TIME CARE. *Shall mean the establishment and routine care of persons on an hourly, daily, weekly, monthly, yearly or permanent basis, whether for 24-hours per day or less, and where sleeping accommodations are provided.*

FUNCTIONAL AREA. [DSA-AC] *A room, space or area intended or designated for a group of related activities or processes.*

[BS] GABLE. The triangular portion of a wall beneath the end of a dual-slope, pitched, or mono-slope roof or portion thereof and above the top plates of the story or level of the ceiling below.

[BE] GAMING. To deal, operate, carry on, conduct, maintain or expose for play any game played with cards, dice, equipment or any mechanical, electromechanical or electronic device or machine for money, property, checks, credit or any representative of value except where occurring at private home or operated by a charitable or educational organization.

[BE] GAMING AREA. Single or multiple areas of a building or facility where gaming machines or tables are present and gaming occurs, including but not limited to, primary casino gaming areas, VIP gaming areas, high-roller gaming areas, bar tops, lobbies, dedicated rooms or spaces such as in retail or restaurant establishments, sports books and tournament areas.

[BE] GAMING MACHINE TYPE. Categorization of gaming machines per type of game played on them, including, but not limited to, slot machines, video poker and video keno.

[BE] GAMING TABLE TYPE. Categorization of gaming tables per the type of game played on them, including, but not limited to, baccarat, bingo, blackjack/21, craps, pai gow, poker, roulette.

GANGWAY. [DSA-AC] *A variable-sloped pedestrian walkway that links a fixed structure or land with a floating structure. Gangways that connect to vessels are not addressed by this code.*

[F] GAS CABINET. A fully enclosed, ventilated noncombustible enclosure used to provide an isolated environment for compressed gas cylinders in storage or use. Doors and access ports for exchanging cylinders and accessing pressure-regulating controls are allowed to be included.

[F] GAS DETECTION SYSTEM. A system or portion of a combination system that utilizes one or more stationary sensors to detect the presence of a specified gas at a specified concentration and initiate one or more responses required by this code, such as notifying a responsible person, activating an alarm signal, or activating or deactivating equipment. A self-contained gas detection and alarm device is not classified as a gas detection system.

[F] GAS ROOM. A separately ventilated, fully enclosed room in which only compressed gases and associated equipment and supplies are stored or used.

[F] GASEOUS HYDROGEN SYSTEM. An assembly of piping, devices and apparatus designed to generate, store, contain, distribute or transport a nontoxic, gaseous hydrogen-containing mixture having not less than 95-percent hydrogen gas by volume and not more than 1-percent oxygen by volume. Gaseous hydrogen systems consist of items such as compressed gas containers, reactors and appurtenances, including pressure regulators, pressure relief devices, manifolds, pumps, compressors and interconnecting piping and tubing and controls.

GENERAL ACUTE CARE BUILDING (GAC Building). [OSHPD 1] *Hospital buildings as defined in the California Administrative Code Section 7-111, providing general acute care services, and all structures, equipment and services required for their continuous operation or access/egress.*

[BF] GLASS FIBERBOARD. Fibrous glass roof insulation consisting of inorganic glass fibers formed into rigid boards using a binder. The board has a top surface faced with asphalt and kraft reinforced with glass fiber.

[BS] GLASS MAT GYPSUM PANEL. A gypsum panel consisting of a noncombustible core primarily of gypsum, surfaced with glass mat partially or completely embedded in the core.

GOLF CAR PASSAGE. [DSA-AC] *A continuous passage on which a motorized golf car can operate.*

GRAB BAR. [DSA-AC & HCD 1-AC] *A bar for the purpose of being grasped by the hand for support.*

GRADE (Adjacent Ground Elevation). [DSA-AC & HCD 1-AC] *The lowest point of elevation of the finished surface of the ground, paving or sidewalk within the area between the building and the property line or, when the property line is more than 5 feet (1524 mm) from the building, between the building and a line 5 feet (1524 mm) from the building. See Health and Safety Code Section 19955.3(d).*

GRADE BREAK. [DSA-AC] *The line where two surface planes with different slopes meet.*

[BS] GRADE (LUMBER). The classification of lumber in regard to strength and utility in accordance with American Softwood Lumber Standard DOC PS 20 and the grading rules of an approved lumber rules-writing agency.

[BE] GRADE FLOOR EMERGENCY ESCAPE AND RESCUE OPENING. An emergency escape and rescue opening located such that the bottom of the clear opening is not more than 44 inches (1118 mm) above or below the finished ground level adjacent to the opening.

[BG] GRADE PLANE. A reference plane representing the average of finished ground level adjoining the building at exterior walls. Where the finished ground level slopes away from the exterior walls, the reference plane shall be established by the lowest points within the area between the building and the lot line or, where the lot line is more than 6 feet (1829 mm) from the building, between the building and a point 6 feet (1829 mm) from the building.

GRADE PLANE, STORY ABOVE. See "Story above grade plane."

[BE] GRANDSTAND. Tiered seating supported on a dedicated structural system and two or more rows high and is not a building element (see "Bleachers").

[BG] GREENHOUSE. A structure or thermally isolated area of a building that maintains a specialized sunlit environment used for and essential to the cultivation, protection or maintenance of plants.

[BG] GROSS LEASABLE AREA. The total floor area designed for tenant occupancy and exclusive use. The area of tenant occupancy is measured from the centerlines of joint partitions to the outside of the tenant walls. All tenant areas, including areas used for storage, shall be included in calculating gross leasable area.

GROUND FLOOR. *The floor of a building with a building entrance on an accessible route. A building may have one or more ground floors.*

GROUND LEVEL PLAY COMPONENT. [DSA-AC] *A play component that is approached and exited at the ground level.*

[BS] GROUND SNOW LOAD, p_g. Design ground snow loads.

[BS] GROUND SNOW LOAD, $p_{g(asd)}$. Allowable stress design ground snow loads

[BS] GROUND SNOW LOAD GEODATABASE. The ASCE database (version 2022-1.0) of geocoded values of risk-targeted design ground snow load values.

[BG] GROUP HOME. *Group Home means a facility which provides 24-hour care and supervision to children, provides services specified in this chapter to a specific client group, and maintains a structured environment, with such services provided at least in part by staff employed by the licensee. The care and supervision provided by a group home shall be nonmedical except as permitted by Welfare and Institutions Code Section 17736(b). Since small family and foster family homes, by definition, care for six or fewer children only, any facility providing 24-hour care for seven or more children must be licensed as a group home.*

[BE] GUARD *[DSA-AC, HCD 1, HCD 2 & HCD 1-AC] OR GUARDRAIL*. A building component or a system of building components located at or near the open sides of elevated walking surfaces that minimizes the possibility of a fall from the walking surface to a lower level.

[BG] GUESTROOM. A room used or intended to be used by one or more guests for living or sleeping purposes.

[BS] GYPSUM BOARD. A type of gypsum panel product consisting of a noncombustible core primarily of gypsum with paper surfacing.

[BS] GYPSUM PANEL PRODUCT. The general name for a family of sheet products consisting essentially of gypsum complying with the standards specified in Table 2506.2, Table 2507.2 and Chapter 35.

[BS] GYPSUM PLASTER. A mixture of calcined gypsum or calcined gypsum and lime and aggregate and other approved materials as specified in this code.

[BS] GYPSUM SHEATHING. Gypsum panel products specifically manufactured with enhanced water resistance for use as a substrate for exterior surface materials.

[BS] GYPSUM VENEER PLASTER. Gypsum plaster applied to an approved base in one or more coats normally not exceeding $^1/_4$ inch (6.4 mm) in total thickness.

[BS] GYPSUM WALLBOARD. A gypsum board used primarily as an interior surfacing for building structures.

[BG] HABITABLE SPACE. A space in a building for living, sleeping, eating or cooking. Bathrooms, toilet rooms, closets, halls, storage or utility spaces and similar areas are not considered habitable spaces.

HALL CALL CONSOLE. [DSA-AC] *An elevator call user interface exclusive to a destination-oriented elevator system that requires the user to select a destination floor prior to entering the elevator car.*

[F] HALOGENATED EXTINGUISHING SYSTEM. A fire-extinguishing system using one or more atoms of an element from the halogen chemical series: fluorine, chlorine, bromine and iodine.

[F] HANDLING. The deliberate transport by any means to a point of storage or *use*.

[BE] HANDRAIL. A horizontal or sloping rail intended for grasping by the hand for guidance or support.

HANDWASHING FIXTURE. *Refer to the California Plumbing Code, Section 210.0.*

HANDWASHING FIXTURE. [OSHPD 1, 2, 3, 4 & 5] *A lavatory provided in patient rooms, nurse stations and other patient care areas intended for staff hygiene and infection control. These special-use lavatories are an element of a handwashing station as defined in Section 1224.3. Refer to the California Plumbing Code Section 210.0 definition for additional requirements associated with handwashing fixtures.*

[BS] HARDBOARD. A fibrous-felted, homogeneous panel made from lignocellulosic fibers consolidated under heat and pressure in a hot press to a density not less than 31 pcf (497 kg/m^3).

HARDWARE. See "Fire exit hardware" and "Panic hardware."

[F] HAZARDOUS MATERIALS. Those chemicals or substances that are physical hazards or health hazards as classified in Section 307 and the *California Fire Code*, whether the materials are in usable or waste condition.

[F] HAZARDOUS PRODUCTION MATERIAL (HPM). A solid, liquid or gas associated with semiconductor manufacturing that has a degree-of-hazard rating in health, flammability or instability of Class 3 or 4 as ranked by *the California Electrical Code* and which is used directly in research, laboratory or production processes which have as their end product materials that are not hazardous.

HAZARDOUS SUBSTANCE. [SFM] *Hazardous Substance is a substance which, by reason of being explosive, flammable, toxic, poisonous, corrosive, oxidizing, irritant or otherwise harmful, is likely to cause injury.*

[BS] HEAD JOINT. Vertical mortar joint placed between masonry units within the wythe at the time the masonry units are laid.

HEALTH CARE PROVIDER. [DSA-AC] *See "Professional Office of a Health Care Provider"*

[F] HEALTH HAZARD. A classification of a chemical for which there is statistically significant evidence that acute or chronic health effects are capable of occurring in exposed persons. The term "health hazard" includes chemicals that are toxic or highly toxic, and corrosive.

HEAT DETECTOR. See "Detector, heat."

[BG] HEIGHT, BUILDING. The vertical distance from grade plane to the average height of the highest roof surface.

[BS] HELICAL PILE. Manufactured steel deep foundation element consisting of a central shaft and one or more helical bearing plates. A helical pile is installed by rotating it into the ground. Each helical bearing plate is formed into a screw thread with a uniform defined pitch.

[F] HELIPAD. A structural surface that is used for the landing, taking off, taxiing and parking of helicopters.

[F] HELIPORT. An area of land or water or a structural surface that is used, or intended for use, for the landing and taking off of helicopters, and any appurtenant areas that are used, or intended for use, for heliport buildings or other heliport facilities.

[F] HELISTOP. The same as "heliport," except that no fueling, defueling, maintenance, repairs or storage of helicopters is permitted.

[F] HIGHER EDUCATION LABORATORY. Laboratories in Group B occupancies used for educational purposes above the 12th grade. Storage, use and handling of chemicals in such laboratories shall be limited to purposes related to testing, analysis, teaching, research or developmental activities on a nonproduction basis.

[F] HIGHLY TOXIC. A material which produces a lethal dose or lethal concentration that falls within any of the following categories:

1. A chemical that has a median lethal dose (LD_{50}) of 50 milligrams or less per kilogram of body weight when administered orally to albino rats weighing between 200 and 300 grams each.
2. A chemical that has a median lethal dose (LD_{50}) of 200 milligrams or less per kilogram of body weight when administered by continuous contact for 24 hours (or less if death occurs within 24 hours) with the bare skin of albino rabbits weighing between 2 and 3 kilograms each.
3. A chemical that has a median lethal concentration (LC_{50}) in air of 200 parts per million by volume or less of gas or vapor, or 2 milligrams per liter or less of mist, fume or dust, when administered by continuous inhalation for 1 hour (or less if death occurs within 1 hour) to albino rats weighing between 200 and 300 grams each.

Mixtures of these materials with ordinary materials, such as water, might not warrant classification as highly toxic. While this system is basically simple in application, any hazard evaluation that is required for the precise categorization of this type of material shall be performed by experienced, technically competent persons.

[BF] HIGH-PRESSURE DECORATIVE EXTERIOR-GRADE COMPACT LAMINATE (HPL). Panels consisting of layers of cellulose fibrous material impregnated with thermosetting resins and bonded together by a high-pressure process to form a homogeneous nonporous core suitable for exterior use.

[BF] HIGH-PRESSURE DECORATIVE EXTERIOR-GRADE COMPACT LAMINATE (HPL) SYSTEM. An exterior wall covering fabricated using HPL in a specific assembly including joints, seams, attachments, substrate, framing and other details as appropriate to a particular design.

[BG] HIGH-RISE BUILDING. *In other than Group I-2 occupancies "high-rise buildings" as used in this code:*

Existing high-rise structure. *A high-rise structure, the construction of which is commenced or completed prior to July 1, 1974.*

High-rise structure. *Every building of any type of construction or occupancy having floors used for human occupancy located more than 75 feet above the lowest floor level having building access (see Section 403), except buildings used as hospitals as defined in Health and Safety Code Section 1250.*

New high-rise building. *A high-rise structure, the construction of which is commenced on or after July 1, 1974. For the purpose of this section, construction shall be deemed to have commenced when plans and specifications are more than 50 percent complete and*

have been presented to the local jurisdiction prior to July 1, 1974. Unless all provisions of this section have been met, the construction of such buildings shall commence on or before January 1, 1976.

New high-rise structure. *A high-rise structure, the construction of which is commenced on or after July 1, 1974.*

HIGH-RISE BUILDING ACCESS. *An exterior door opening conforming to all of the following:*

1. *Suitable and available for fire department use.*
2. *Located not more than 2 feet (610 mm) above the adjacent ground level.*
3. *Leading to a space, room or area having foot traffic communication capabilities with the remainder of the building.*
4. *Designed to permit penetration through the use of fire department forcible-entry tools and equipment unless other approved arrangements have been made with the fire authority having jurisdiction.*

[A] HISTORIC BUILDINGS. Any building or structure that is one or more of the following:

1. Listed or certified as eligible for listing by the State Historic Preservation Officer or the Keeper of the National Register of Historic Places, in the National Register of Historic Places.
2. Designated as historic under an applicable state or local law.
3. Certified as a contributing resource within a National Register, state designated or locally designated historic district.

[DSA-AC] *See "Qualified historical building or property," C.C.R., Title 24, Part 8.*

HOLDING FACILITY. *A detention or correctional facility or area where inmates, staff and public are not housed but are restrained.*

[BF] HORIZONTAL ASSEMBLY. A fire-resistance-rated floor or roof assembly of materials designed to restrict the spread of fire in which continuity is maintained.

[BE] HORIZONTAL EXIT. An exit component consisting of fire-resistance-rated construction and opening protectives intended to compartmentalize portions of a building thereby creating refuge areas that afford safety from the fire and smoke from the area of fire origin.

[BG] HOSPITALS AND PSYCHIATRIC HOSPITALS. Facilities that provide care or treatment for the medical, psychiatric, obstetrical, or surgical treatment of care recipients who are incapable of self-preservation *or classified as nonambulatory or bedridden.*

HOTEL OR MOTEL. [HCD 1 & HCD 2] *Any building containing six or more guest rooms intended or designed to be used, or which are used, rented or hired out to be occupied, or which are occupied for sleeping purposes by guests.*

HOUSING AT A PLACE OF EDUCATION. *Housing operated by or on behalf of an elementary, secondary, undergraduate or postgraduate school, or other place of education, including dormitories, suites, apartments or other places of residence.*

HOUSING POD. *A section of a housing unit designed to segregate different populations. Housing Pods contain sleeping areas, dayroom space, showers, toilet facilities and support space.*

HOUSING UNIT. A building or portion of a building *intended to lodge inmates on a 24-hour basis where accommodations are provided for sleeping* and other inmate support areas. A Housing Unit may contain one or more housing pods.

[BG] HOUSING UNIT. A dormitory or a group of cells with a common dayroom in Group I-3.

HPM. See "Hazardous Production Material."

[F] HPM ROOM. A room used in conjunction with or serving a Group H-5 occupancy, where HPM is stored or used and which is classified as a Group H-2, H-3 or H-4 occupancy.

[BS] HURRICANE-PRONE REGIONS. Areas vulnerable to hurricanes defined as:

1. The US Atlantic Ocean and Gulf of Mexico coasts where the basic wind speed, *V*, for Risk Category II buildings is greater than 115 mph (51.4 m/s);
2. Hawaii, Puerto Rico, Guam, Virgin Islands and American Samoa.

[F] HYBRID FIRE EXTINGUISHING SYSTEM. A system that utilizes a combination of atomized water and inert gas to extinguish fire.

[F] HYDROGEN FUEL GAS ROOM. A room or space that is intended exclusively to house a gaseous hydrogen system.

[BS] ICE-SENSITIVE STRUCTURE. A structure for which the effect of an atmospheric ice load governs the design of a structure or portion thereof. This includes, but is not limited to, lattice structures, guyed masts, overhead lines, light suspension and cable-stayed bridges, aerial cable systems (e.g., for ski lifts or logging operations), amusement rides, open catwalks and platforms, flagpoles and signs.

IF, IF . . . THEN. [DSA-AC] *The terms "if" and "if … then" denote a specification that applies only when the conditions described are present.*

[F] IMMEDIATELY DANGEROUS TO LIFE AND HEALTH (IDLH). The concentration of airborne contaminants which poses a threat of death, immediate or delayed permanent adverse health effects, or effects that could prevent escape from such an environment. This contaminant concentration level is established by the National Institute of Occupational Safety and Health (NIOSH) based on both toxicity and flammability. It generally is expressed in parts per million by volume (ppmv/v) or milligrams per cubic meter (mg/m^3). If adequate data do not exist for precise establishment of IDLH concentrations, an independent certified industrial hygienist, industrial toxicologist, appropriate regulatory agency or other source approved by the building official shall make such determination.

[BS] IMPACT LOAD. The load resulting from moving machinery, elevators, craneways, vehicles and other similar forces and kinetic loads, pressure and possible surcharge from fixed or moving loads.

[BS] IMPACT PROTECTIVE SYSTEM. Construction that has been shown by testing to withstand the impact of test missiles and that is applied, attached or locked over exterior glazing.

[BG] INCAPABLE OF SELF-PRESERVATION. Describes persons who, because of age, physical limitations, mental limitations, chemical dependency or medical treatment, cannot respond as an individual to an emergency situation.

INCIDENTAL STRUCTURAL ALTERATIONS, ADDITIONS OR REPAIRS. [OSHPD 1, 1R, 2, 4 & 5] *Refer to Chapter 2 of the California Existing Building Code.*

[F] INCOMPATIBLE MATERIALS. Materials that, when mixed, have the potential to react in a manner that generates heat, fumes, gases or byproducts which are hazardous to life or property.

[BS] INDIVIDUAL TRUSS MEMBER. A truss chord or truss web.

[F] INERT GAS. A gas that is capable of reacting with other materials only under abnormal conditions such as high temperatures, pressures and similar extrinsic physical forces. Within the context of the code, inert gases do not exhibit either physical or health hazard properties as defined (other than acting as a simple asphyxiant) or hazard properties other than those of a compressed gas. Some of the more common inert gases include argon, helium, krypton, neon, nitrogen and xenon.

INFANT. *Any child who because of age only, is unable to walk and requires the aid of another person to evacuate the building. In no case shall the term "infant" mean a child 2 years of age or older.*

INFLATABLE AMUSEMENT DEVICE. *A device made of flexible fabric or other combustible materials that is inflated by one or more air-blowers providing internal air pressure to maintain its shape. Such a device is designed for recreational activities that allow occupants to bounce, climb, slide, negotiate an obstacle course or participate in interactive play.*

[BG] INFORMATION TECHNOLOGY EQUIPMENT (ITE). Computers, data storage, servers and network communication equipment.

[BG] INFORMATION TECHNOLOGY EQUIPMENT FACILITIES (ITEF). Data centers and computer rooms used primarily to house information technology equipment.

[F] INITIATING DEVICE. A system component that originates transmission of a change-of-state condition, such as in a smoke detector, manual fire alarm box or supervisory switch.

INLET. *A fitting or fixture through which circulation water enters the pool.*

[BF] INSULATED METAL PANEL (IMP). A factory manufactured panel consisting of metal facings and an insulation core intended for use as a system forming an exterior wall, an exterior wall covering, a roof covering or a roof assembly of a building.

[BF] INSULATED VINYL SIDING. A continuous insulation cladding product, with manufacturer-installed foam plastic insulating material as an integral part of the cladding product, having a thermal resistance not less than R-2.

[BF] INSULATING SHEATHING. A rigid panel or board insulation material having a thermal resistance of not less than R-2 of the core material with properties suitable for use on walls, floors, roofs or foundations.

INTAKE AND RELEASE AREAS. *A temporary holding suite where detained and/or incarcerated individuals are received and processed into a facility or are released from the facility. The suite may contain holding cells, sobering and safety cells, medical examination space, interview rooms, property storage and staff work areas.*

[BE] INTENDED TO BE OCCUPIED AS A RESIDENCE. This refers to a dwelling unit or sleeping unit that can or will be used all or part of the time as the occupant's place of abode.

[BE] INTERIOR EXIT RAMP. An exit component that serves to meet one or more means of egress design requirements, such as required number of exits or exit access travel distance, and provides for a protected path of egress travel to the exit discharge or public way.

[BE] INTERIOR EXIT STAIRWAY. An exit component that serves to meet one or more means of egress design requirements, such as required number of exits or exit access travel distance, and provides for a protected path of egress travel to the exit discharge or public way.

[BF] INTERIOR FINISH. Interior finish includes interior wall and ceiling finish and interior floor finish.

[BF] INTERIOR FLOOR FINISH. The exposed floor surfaces of buildings including coverings applied over a finished floor or stair, including risers.

[BF] INTERIOR FLOOR-WALL BASE. Interior floor finish trim used to provide a functional or decorative border at the intersection of walls and floors.

[BF] INTERIOR SURFACES. Surfaces other than weather exposed surfaces.

[BF] INTERIOR WALL AND CEILING FINISH. The exposed interior surfaces of buildings, including but not limited to: fixed or movable walls and partitions; toilet room privacy partitions; columns; ceilings; and interior wainscoting, paneling or other finish applied structurally or for decoration, acoustical correction, surface insulation, structural fire resistance or similar purposes, but not including trim.

[BS] INTERLAYMENT. A layer of felt or nonbituminous saturated felt not less than 18 inches (457 mm) wide, shingled between each course of a wood-shake roof covering.

INTERNATIONAL SYMBOL OF ACCESSIBILITY. *The symbol adopted by Rehabilitation International's 11th World Congress for the purpose of indicating that buildings and facilities are accessible to persons with disabilities.*

[BS] INTERMODAL SHIPPING CONTAINER. A six-sided steel unit originally constructed as a general cargo container used for the transport of goods and materials.

[BF] INTUMESCENT FIRE-RESISTIVE MATERIALS. A liquid mixture applied to substrates by brush, roller, spray or trowel that expands into a protective insulating layer to provide fire-resistive protection of the substrates when exposed to flame or intense heat.

IRREGULAR STRUCTURE. [DSA-SS, DSA-SS/CC, OSHPD 1, 1R, 2, 4 & 5] *A structure designed as having one or more plan or vertical irregularities per ASCE 7 Section 12.3.*

[BS] JOINT. The opening in or between adjacent assemblies that is created due to building tolerances, or is designed to allow independent movement of the building in any plane caused by thermal, seismic, wind or any other loading.

[A] JURISDICTION. The governmental unit that has adopted this code.

KEY STATION. [DSA-AC] *Certain rapid and light rail stations, and commuter rail stations, as defined under criteria established by the Department of Transportation in 49 CFR 37.47 and 49 CFR 37.51, respectively.*

KICK PLATE. *An abrasion-resistant plate affixed to the bottom portion of a door to prevent a trap condition and protect its surface.*

KITCHEN OR KITCHENETTE. [DSA-AC] *A room, space or area with equipment for the preparation and cooking of food.*

[BF] L RATING. The air leakage rating of a through penetration firestop system or a fire-resistant joint system when tested in accordance with UL 1479 or UL 2079, respectively.

[A] LABEL. An identification applied on a product by the manufacturer that contains the name of the manufacturer, the function and performance characteristics of the product or material and the name and identification of an approved agency, and that indicates that the representative sample of the product or material has been tested and evaluated by an approved agency (see Section 1703.5, "Manufacturer's designation" and "Mark").

[A] LABELED. Equipment, materials or products to which has been affixed a label, seal, symbol or other identifying mark of a nationally recognized testing laboratory, approved agency or other organization concerned with product evaluation that maintains periodic inspection of the production of the above-labeled items and whose labeling indicates either that the equipment, material or product meets identified standards or has been tested and found suitable for a specified purpose. ***[HCD 1 & HCD 2] "****Labeled" means equipment or materials to which has been attached a label, symbol or other identifying mark of an organization, approved by the Department, that maintains a periodic inspection program of production of labeled products, installations, equipment or materials and by whose labeling the manufacturer indicates compliance with appropriate standards or performance in a specified manner.*

LABORATORY. [SFM] *A room, building or area where the use and storage of hazardous materials are utilized for testing, analysis, instruction, research or developmental activities.*

LABORATORY SUITE. [SFM] *A laboratory suite is a Group L Occupancy space within a building or structure, which may include multiple laboratories, offices, storage, equipment rooms or similar support functions, where the aggregate quantities of hazardous materials stored and used do not exceed the quantities set forth in Table 453.7.2.1 (see Section 453).*

LADDER. *A series of vertically separate treads or rungs either connected by vertical rail members or independently fastened to an adjacent vertical pool wall.*

LAVATORY. *A fixed bowl or basin with running water and drainpipe, as in a toilet or bathing facility, for washing or bathing purposes. (As differentiated from the definition of "Sink".)*

LEVEL AREA. [HCD 1-AC] *A specified surface that does not have a slope in any direction exceeding $^1/_4$ inch (6.4 mm) in 1 foot (305 mm) from the horizontal (2.083-percent gradient).*

[BS] LANDSCAPED ROOF. An area over a roof assembly incorporating planters, vegetation, hardscaping or other similar decorative appurtenances that are not part of the roof assembly.

LEVEL OF EXIT DISCHARGE. See "Exit discharge, level of."

LICENSING AGENCY. [OSHPD 1**, 1R, 2, 3, 4 & 5*****]*** *(See Chapter 12, Section 1224.3 for defined term.)*

[F] LIFE SAFETY SYSTEMS. Systems, devices and equipment that enhance or facilitate evacuation, smoke control, compartmentation and isolation.

LIFT, PLATFORM (WHEELCHAIR). [HCD 1-AC] *See "Platform (Wheelchair) Lift".*

[BF] LIGHT-DIFFUSING SYSTEM. Construction consisting in whole or in part of lenses, panels, grids or baffles made with light-transmitting plastics positioned below independently mounted electrical light sources, skylights or light-transmitting plastic roof panels. Lenses, panels, grids and baffles that are part of an electrical fixture shall not be considered as a light-diffusing system.

[BS] LIGHT-FRAME CONSTRUCTION. Construction whose vertical and horizontal structural elements are primarily formed by a system of repetitive wood or cold-formed steel framing members.

[BF] LIGHT-TRANSMITTING PLASTIC ROOF PANELS. Structural plastic panels other than skylights that are fastened to structural members, or panels or sheathing and that are used as light-transmitting media in the plane of the roof.

[BF] LIGHT-TRANSMITTING PLASTIC WALL PANELS. Plastic materials that are fastened to structural members, or to structural panels or sheathing, and that are used as light-transmitting media in exterior walls.

[BS] LIMIT OF MODERATE WAVE ACTION. Line shown on FIRMs to indicate the inland limit of the $1^1/_2$-foot (457 mm) breaking wave height during the base flood.

[BS] LIMIT STATE. A condition beyond which a structure or member becomes unfit for service and is judged to be no longer useful for its intended function (serviceability limit state) or to be unsafe (strength limit state).

[BG] LIMITED VERBAL OR PHYSICAL ASSISTANCE. Describes persons who, because of age, physical limitations, cognitive limitations, treatment or chemical dependency, may not independently recognize, respond or evacuate without limited verbal or physical assistance during an emergency situation. Limited verbal assistance includes prompting, giving and repeating instructions. Limited physical assistance includes assistance with transfers to walking aids or mobility devices and assistance with egress.

[F] LIQUID. A material that has a melting point that is equal to or less than 68°F (20°C) and a boiling point that is greater than 68°F (20°C) at 14.7 pounds per square inch absolute (psia) (101 kPa). When not otherwise identified, the term "liquid" includes both flammable and combustible liquids.

[F] LIQUID STORAGE ROOM. A room classified as a Group H-3 occupancy used for the storage of flammable or combustible liquids in a closed condition.

LIQUIDTIGHT FLOOR. [SFM] *A nonpermeable barrier capable of containing hazardous material liquids without degradation.*

[F] LIQUID USE, DISPENSING AND MIXING ROOM. A room in which Class I, II and IIIA flammable or combustible liquids are used, dispensed or mixed in open containers.

[A] LISTED. Equipment, materials, products or services included in a list published by an organization acceptable to the building official and concerned with evaluation of products or services that maintains periodic inspection of production of listed equipment or materials or periodic evaluation of services and whose listing states either that the equipment, material, product or service meets identified standards or has been tested and found suitable for a specified purpose. Terms that are used to identify listed equipment, products or materials include "listed," "certified," "classified" or other terms as determined appropriate by the listing organization.

[HCD 1 & HCD 2] "*Listed" means all products that appear in a list published by an approved testing or listing agency. For additional information, see Health and Safety Code Section 17920(h).*

[SFM] *For applications listed in Section 1.11 regulated by the Office of the State Fire Marshal, "listed" shall also mean equipment or materials accepted by the state fire marshal as conforming to the provisions of the State Fire Marshal's regulations and which are included in a list published by the State Fire Marshal.*

LISTING AGENCY. [HCD 1 & HCD 2] *An agency approved by the department that is in the business of listing and labeling products, materials, equipment and installations tested by an approved testing agency, and that maintains a periodic inspection program on current production of listed products, equipment and installations, and that, at least annually, makes available a published report of these listings. For additional information, see Health and Safety Code Section 17920(i).*

[BS] LIVE LOAD. A load produced by the use and occupancy of the building or other structure that does not include construction or environmental loads such as wind load, snow load, rain load, earthquake load, flood load or dead load.

[BS] LIVE LOAD, ROOF. A load on a roof produced:

1. During maintenance by workers, equipment and materials; or
2. During the life of the structure by movable objects such as planters or other similar small decorative appurtenances that are not occupancy related.

[BG] LIVE/WORK UNIT. A dwelling unit or sleeping unit in which a significant portion of the space includes a nonresidential use that is operated by the tenant *or building owner*.

[BS] LOAD AND RESISTANCE FACTOR DESIGN (LRFD). A method of proportioning structural members and their connections using load and resistance factors such that no applicable limit state is reached when the structure is subjected to appropriate load combinations. The term "LRFD" is used in the design of steel and wood structures.

[BS] LOAD EFFECTS. Forces and deformations produced in structural members by the applied loads.

[BS] LOAD FACTOR. A factor that accounts for deviations of the actual load from the nominal load, for uncertainties in the analysis that transforms the load into a load effect, and for the probability that more than one extreme load will occur simultaneously.

[BS] LOADS. Forces or other actions that result from the weight of building materials, occupants and their possessions, environmental effects, differential movement and restrained dimensional changes. Permanent loads are those loads in which variations over time are rare or of small magnitude, such as dead loads. All other loads are variable loads (see "Nominal loads").

LOBBY. [SFM, HCD 1 & HCD 2] *An area not defined as a waiting room at the entrance of a building through which persons must pass.*

LODGING HOUSE. [HCD 1 & HCD 1-AC] *Any building or portion thereof containing not more than five guest rooms where rent is paid in money, goods, labor or otherwise, and that is occupied by the proprietor as the residence of such proprietor.*

[BG] LODGING HOUSE. A one-family dwelling where one or more occupants are primarily permanent in nature and rent is paid for guest rooms.

[A] LOT. A portion or parcel of land considered as a unit.

[A] LOT LINE. A line dividing one lot from another, or from a street or any public place.

[BE] LOW-ENERGY POWER-OPERATED DOOR. A swinging, sliding or folding door that opens automatically upon an action by a pedestrian such as pressing a push plate or waving a hand in front of a sensor. The door closes automatically, and operates with decreased forces and decreased speeds (see "Power-assisted door" and "Power-operated door").

[F] LOWER FLAMMABLE LIMIT (LFL). The minimum concentration of vapor in air at which propagation of flame will occur in the presence of an ignition source. The LFL is sometimes referred to as "LEL" or "lower explosive limit."

[BS] LOWEST FLOOR. The lowest floor of the lowest enclosed area, including basement, but excluding any unfinished or flood-resistant enclosure, usable solely for vehicle parking, building access or limited storage provided that such enclosure is not built so as to render the structure in violation of Section 1612.

MAIL BOXES. [DSA-AC] *Receptacles for the receipt of documents, packages or other deliverable matter. Mail boxes include, but are not limited to, post office boxes and receptacles provided by commercial mail-receiving agencies, apartment facilities or schools.*

[BS] LOW-SLOPE. A roof slope less than 2 units vertical in 12 units horizontal (17-percent slope).

[BS] MAIN WINDFORCE-RESISTING SYSTEM. An assemblage of structural elements assigned to provide support and stability for the overall structure. The system generally receives wind loading from more than one surface.

MAJOR STRUCTURAL ALTERATIONS, ADDITIONS OR REPAIRS. [OSHPD 1, 1R, 2, 4 & 5] *Refer to Chapter 2 of the California Existing Building Code.*

MALL BUILDING, COVERED and MALL BUILDING, OPEN. See "Covered mall building."

[BE] MANUAL BOLT. Door-locking hardware operable from one side of the door, or from the edge of a door leaf, with a bolt or rod extended and retracted by manual movement of the bolt or rod, such as a manual flush bolt or manual surface bolt (see "Automatic flush bolt," "Constant latching bolt," "Dead bolt").

[F] MANUAL FIRE ALARM BOX. A manually operated device used to initiate an alarm signal.

[A] MANUFACTURER'S DESIGNATION. An identification applied on a product by the manufacturer indicating that a product or material complies with a specified standard or set of rules (see "Label" and "Mark").

[A] MARK. An identification applied on a product by the manufacturer indicating the name of the manufacturer and the function of a product or material (see "Label" and "Manufacturer's designation").

MARKED CROSSING. *A crosswalk or other identified path intended for pedestrian use in crossing a vehicular way.*

[BG] MARQUEE. A canopy that has a top surface which is sloped less than 25 degrees from the horizontal and is located less than 10 feet (3048 mm) from operable openings above or adjacent to the level of the marquee.

[BS] MASONRY. A built-up construction or combination of building units or materials of clay, shale, concrete, glass, gypsum, stone or other approved units bonded together with or without mortar or grout or other accepted methods of joining.

Glass unit masonry. Masonry composed of glass units bonded by mortar.

Plain masonry. Masonry in which the tensile resistance of the masonry is taken into consideration and the effects of stresses in reinforcement are neglected.

Reinforced masonry. Masonry construction in which reinforcement acting in conjunction with the masonry is used to resist forces.

Solid masonry. Masonry consisting of solid masonry units laid contiguously with the joints between the units filled with mortar.

Unreinforced (plain) masonry. Masonry in which the tensile resistance of masonry is taken into consideration and the resistance of the reinforcing steel, if present, is neglected.

[BS] MASONRY UNIT. Brick, tile, stone, glass block or concrete block conforming to the requirements specified in Section 2103.

Hollow. A masonry unit whose net cross-sectional area in any plane parallel to the load-bearing surface is less than 75 percent of its gross cross-sectional area measured in the same plane.

Solid. A masonry unit whose net cross-sectional area in every plane parallel to the load-bearing surface is 75 percent or more of its gross cross-sectional area measured in the same plane.

[BG] MASS TIMBER. Structural elements of Type IV construction primarily of solid, built-up, panelized or engineered wood products that meet minimum cross-section dimensions of Type IV construction.

MAY. [DSA-AC] *May denotes an option or alternative.*

[BE] MEANS OF EGRESS. A continuous and unobstructed path of vertical and horizontal egress travel from any occupied portion of a building or structure to a public way. A means of egress consists of three separate and distinct parts: the exit access, the exit and the exit discharge.

[BG] MECHANICAL EQUIPMENT SCREEN. A rooftop structure, not covered by a roof, used to aesthetically conceal plumbing, electrical or mechanical equipment from view.

[BG] MECHANICAL-ACCESS ENCLOSED PARKING GARAGE. An enclosed parking garage that employs parking machines, lifts, elevators or other mechanical devices for vehicle moving from and to street level and in which public occupancy in the garage is prohibited in all areas except the vehicle access bay.

[BG] MECHANICAL-ACCESS OPEN PARKING GARAGES. Open parking garages employing parking machines, lifts, elevators or other mechanical devices for vehicles moving from and to street level and in which public occupancy is prohibited above the street level.

[BG] MEDICAL CARE. Care involving medical or surgical procedures, nursing or for psychiatric purposes.

MEDICAL POOL. *A special-purpose pool used by a state-recognized medical institution engaged in the healing arts under the direct supervision of licensed medical personnel for treatment of the infirm.*

[BF] MEMBRANE PENETRATION. A breach in one side of a floor-ceiling, roof-ceiling or wall assembly to accommodate an item installed into or passing through the breach.

[BG] MEMBRANE-COVERED CABLE STRUCTURE. A nonpressurized structure in which a mast and cable system provides support and tension to the membrane weather barrier and the membrane imparts stability to the structure.

[BG] MEMBRANE-COVERED FRAME STRUCTURE. A nonpressurized building wherein the structure is composed of a rigid framework to support a tensioned membrane which provides the weather barrier.

[BF] MEMBRANE-PENETRATION FIRESTOP. A material, device or construction installed to resist for a prescribed time period the passage of flame and heat through openings in a protective membrane in order to accommodate cables, cable trays, conduit, tubing, pipes or similar items.

[BF] MEMBRANE-PENETRATION FIRESTOP SYSTEM. An assemblage consisting of a fire-resistance-rated floor-ceiling, roof-ceiling or wall assembly, one or more penetrating items installed into or passing through the breach in one side of the assembly and the materials or devices, or both, installed to resist the spread of fire into the assembly for a prescribed period of time.

[BE] MERCHANDISE PAD. A merchandise pad is an area for display of merchandise surrounded by aisles, permanent fixtures or walls. Merchandise pads contain elements such as nonfixed and movable fixtures, cases, racks, counters and partitions as indicated in Section 105.2 from which customers browse or shop.

[BS] METAL BUILDING SYSTEM. An integrated set of fabricated components and assemblies that form a complete or partial building shell that is designed by the manufacturer. This system typically includes but is not limited to primary framing composed of built-up structural steel members, secondary members that are cold-formed steel or open-web steel joists, a metal panel roof system and exterior wall cladding. The system is manufactured in a manner that permits plant or field inspection prior to assembly or erection.

[BF] METAL COMPOSITE MATERIAL (MCM). A factory-manufactured panel consisting of metal skins bonded to both faces of a solid plastic core.

[BF] METAL COMPOSITE MATERIAL (MCM) SYSTEM. An exterior wall covering fabricated using MCM in a specific assembly including joints, seams, attachments, substrate, framing and other details as appropriate to a particular design.

[BS] METAL ROOF PANEL. An interlocking metal sheet having a minimum installed weather exposure of 3 square feet (0.279 m^2) per sheet.

[BS] METAL ROOF SHINGLE. An interlocking metal sheet having an installed weather exposure less than 3 square feet (0.279 m^2) per sheet.

[BG] MEZZANINE. An intermediate level or levels between the floor and ceiling of any story and in accordance with Section 505. ***[DSA-AC]*** *An intermediate level or levels between the floor and ceiling of any story with an aggregate floor area of not more than one-third of the area of the room or space in which the level or levels are located. Mezzanines have sufficient elevation that space for human occupancy can be provided on the floor below.*

[BS] MICROPILE. A micropile is a bored, grouted-in-place deep foundation element that develops its load-carrying capacity by means of a bond zone in soil, bedrock or a combination of soil and bedrock.

[BF] MINERAL BOARD. A rigid felted thermal insulation board consisting of either felted mineral fiber or cellular beads of expanded aggregate formed into flat rectangular units.

[BF] MINERAL FIBER. Insulation composed principally of fibers manufactured from rock, slag or glass, with or without binders.

[BF] MINERAL WOOL. Synthetic vitreous fiber insulation made by melting predominately igneous rock or furnace slag, and other inorganic materials, and then physically forming the melt into fibers.

MINOR STRUCTURAL ALTERATIONS, ADDITIONS OR REPAIRS. [OSHPD 1, 1R, 2, 4 & 5] *Refer to Chapter 2 of the California Existing Building Code.*

[BS] MODIFIED BITUMEN ROOF COVERING. One or more layers of polymer-modified asphalt sheets. The sheet materials shall be fully adhered or mechanically attached to the substrate or held in place with an approved ballast layer.

MONOLITHIC. [OSHPD 1, 1R, 2, 3, 4 & 5] *(See Chapter 12, Section 1224.3 for defined term.)*

MONOLITHIC CEILING. [OSHPD 1, 1R, 2, 3, 4 & 5] *(See Chapter 12, Section 1224.3 for defined term.)*

[BS] MORTAR. A mixture consisting of cementitious materials, fine aggregates, water, with or without admixtures, that is used to construct unit masonry assemblies.

[BS] MORTAR, SURFACE-BONDING. A mixture to bond concrete masonry units that contains hydraulic cement, glass fiber reinforcement with or without inorganic fillers or organic modifiers and water.

MOTEL. [HCD 1 & HCD 2] *See "Hotel or Motel."*

MOTION PICTURE AND TELEVISION PRODUCTION STUDIO SOUND STAGES, APPROVED PRODUCTION FACILITIES AND PRODUCTION LOCATIONS. *See Chapter 48, California Fire Code.*

MULTI-BEDROOM HOUSING UNIT. [DSA-AC] *A housing unit, intended for use by students at a place of education, with a kitchen and/or bathroom(s) within the unit, such as an apartment or dormitory. Multi-bedroom housing units are separate from one another and from common use spaces within a building.*

[BE] MULTILEVEL ASSEMBLY SEATING. Seating that is arranged in distinct levels where each level is composed of either multiple rows, or a single row of box seats accessed from a separate level.

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[F] MULTIPLE-STATION ALARM DEVICE. Two or more single-station alarm devices that can be interconnected such that actuation of one causes all integral or separate audible alarms to operate. A multiple-station alarm device can consist of one single-station alarm device having connections to other detectors or to a manual fire alarm box.

[F] MULTIPLE-STATION SMOKE ALARM. Two or more single-station alarm devices that are capable of interconnection such that actuation of one causes the appropriate alarm signal to operate in all interconnected alarms.

MULTISTORY DWELLING UNIT. [HCD 1-AC] *A dwelling unit with finished living space located on one floor and the floor or floors immediately above or below it.*

[BE] MULTISTORY UNIT. A dwelling unit or sleeping unit with habitable space located on more than one story.

[BF] NAILABLE SUBSTRATE. A product or material such as framing, sheathing or furring, composed of wood, wood-based materials or other materials providing equivalent fastener withdrawal resistance.

[BS] NAILING, BOUNDARY. A special nailing pattern required by design at the boundaries of diaphragms.

[BS] NAILING, EDGE. A special nailing pattern required by design at the edges of each panel within the assembly of a diaphragm or shear wall.

[BS] NAILING, FIELD. Nailing required between the sheathing panels and framing members at locations other than boundary nailing and edge nailing.

[BS] NATURALLY DURABLE WOOD. The heartwood of the following species except for the occasional piece with corner sapwood, provided 90 percent or more of the width of each side on which it occurs is heartwood.

Decay resistant. Redwood, cedar, black locust and black walnut.

Termite resistant. Redwood, Alaska yellow cedar, Eastern red cedar and Western red cedar.

NEWLY CONSTRUCTED. [HCD 1-AC] *A building that has never before been used or occupied for any purpose.*

NFPA. [DSA-AC] *The National Fire Protection Association.*

[BS] NOMINAL LOADS. The magnitudes of the loads specified in Chapter 16 (dead, live, soil, wind, tornado, snow, rain, flood and earthquake).

[BS] NOMINAL SIZE (LUMBER). The commercial size designation of width and depth, in standard sawn lumber and glued-laminated lumber grades; somewhat larger than the standard net size of dressed lumber, in accordance with DOCPS 20 for sawn lumber and with the ANSI/AWC NDS for glued-laminated lumber.

NON-GENERAL ACUTE CARE BUILDING (Non-GAC Building). [OSHPD 1R] *A non-freestanding SPC building, which is removed from general acute care services in accordance with the Section 309A of the California Existing Building Code that remains under OSHPD jurisdiction as part of an OSHPD 1 Hospital building.*

NONAMBULATORY PERSONS. *Persons unable to leave a building unassisted under emergency conditions. It includes, but is not limited to, persons who depend on mechanical aids such as crutches, walkers and wheelchairs and any person who is unable to physically and mentally respond to a sensory signal approved by the state fire marshal or an oral instruction relating to fire danger.*

The determination of ambulatory or nonambulatory status of persons with developmental disabilities shall be made by the Director of Social Services or his or her designated representative, in consultation with the director of Developmental Services or his or her designated representative. The determination of ambulatory or nonambulatory status of all other disabled persons placed after January 1, 1984, who are not developmentally disabled shall be made by the Director of Social Services or his or her designated representative.

NONCOMBUSTIBLE. [SFM] *Noncombustible as applied to building construction material means a material which, in the form in which it is used, is either one of the following:*

1. *Material of which no part will ignite and burn when subjected to fire. Any material passing ASTM E136 shall be considered noncombustible.*
2. *Material having a structural base of noncombustible material as defined in Item 1 above, with a surfacing material not over $^1/_8$ inch (3.2 mm) thick which has a flame-spread index of 50 or less.*

"Noncombustible" does not apply to surface finish materials. Material required to be noncombustible for reduced clearances to flues, heating appliances or other sources of high temperature shall refer to material conforming to Item 1. No material shall be classed as noncombustible which is subject to increase in combustibility or flame-spread index, beyond the limits herein established, through the effects of age, moisture or other atmospheric condition.

[BG] NONCOMBUSTIBLE MEMBRANE STRUCTURE. A membrane structure in which the membrane and all component parts of the structure are noncombustible.

NONPATIENT-CARE SUITE. *In Group I-2 occupancies, a group of rooms or spaces within a suite for use as administrative, business and professional offices.*

[BF] NONCOMBUSTIBLE PROTECTION (FOR MASS TIMBER). Noncombustible material, in accordance with Section 703.6, designed to increase the fire-resistance rating and delay the combustion of mass timber.

[BS] NONSTRUCTURAL CONCRETE. Any element made of plain or reinforced concrete that is not part of a structural system required to transfer either gravity or lateral loads to the ground.

NORMAL. [HCD 1 & HCD 2] *Conforming to a pattern or standard regarded as usual or typical.*

[F] NORMAL TEMPERATURE AND PRESSURE (NTP). A temperature of 70°F (21°C) and a pressure of 1 atmosphere [14.7 psia (101 kPa)].

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[BE] NOSING. The leading edge of treads of *stairs* and of landings at the top of stairway flights.

NOTIFICATION ZONE. See "Zone, notification."

NPC 1, NPC 2, NPC 3/NPC 3R, NPC 4, NPC-4D and NPC 5. [OSHPD 1] *Building nonstructural performance categories for Hospital Buildings defined in Table 11.1 of California Administrative Code (Part 1, Title 24 CCR), Chapter 6.*

[F] NUISANCE ALARM. An alarm caused by mechanical failure, malfunction, improper installation or lack of proper maintenance, or an alarm activated by a cause that cannot be determined.

[BG] NURSING HOMES. Facilities that provide care, including both intermediate care facilities and skilled nursing facilities where any of the persons are incapable of self-preservation *or classified as nonambulatory or bedridden.*

[BE] OCCUPANT LOAD. The number of persons for which the means of egress of a building or portion thereof is designed.

[BG] OCCUPIABLE ROOF. An exterior space on a roof that is designed for human occupancy, other than maintenance or repair, and is equipped with a means of egress system meeting the requirements of this code.

[BG] OCCUPIABLE SPACE. A room or enclosed space designed for human occupancy in which individuals congregate for amusement, educational or similar purposes or in which occupants are engaged at labor, and which is equipped with means of egress and light and ventilation facilities meeting the requirements of this code.

OFF-SITE CONSTRUCTION. [OSHPD 1, 1R, 2, 4 & 5] *A modular building, modular component or panelized system that is designed and constructed in compliance with Section 1710 or 1710A of this code and is wholly or in substantial part fabricated or assembled in off-site fabrication plants for installation (or assembly and installation) on a separate building site and has been fabricated in such a manner that all parts or processes cannot be inspected at the installation site without disassembly or damage.*

[BG] OPEN PARKING GARAGE. A structure or portion of a structure with the openings as described in Section 406.5.2 on two or more sides that is used for the parking or storage of private motor vehicles as described in Section 406.5.3.

OPEN RISER. *The space between two adjacent stair treads not closed by a riser.*

[F] OPEN SYSTEM. The use of a solid or liquid hazardous material involving a vessel or system that is continuously open to the atmosphere during normal operations and where vapors are liberated, or the product is exposed to the atmosphere during normal operations. Examples of open systems for solids and liquids include dispensing from or into open beakers or containers, dip tank and plating tank operations.

[BE] OPEN-AIR ASSEMBLY SEATING. Seating served by means of egress that is not subject to smoke accumulation within or under a structure and is open to the atmosphere.

[BE] OPEN-ENDED CORRIDOR. An interior corridor that is open on each end and connects to an exterior stairway or ramp at each end with no intervening doors or separation from the corridor.

[BF] OPENING PROTECTIVE. A fire door assembly, fire shutter assembly, fire window assembly or glass-block assembly in a fire-resistance-rated wall or partition.

OPERABLE PART. *A component of an element used to insert or withdraw objects, or to activate, deactivate or adjust the element.*

[F] OPERATING BUILDING. A building occupied in conjunction with the manufacture, transportation or use of explosive materials. Operating buildings are separated from one another with the use of intraplant or intraline distances.

[BS] ORDINARY PLAIN CONCRETE STRUCTURAL WALL. See Section 1905.2.

[BS] ORDINARY PRECAST STRUCTURAL WALL. See Section 1905.2.

[BS] ORDINARY REINFORCED CONCRETE STRUCTURAL WALL. See Section 1905.2.

[F] ORGANIC PEROXIDE. An organic compound that contains the bivalent -O-O- structure and which may be considered to be a structural derivative of hydrogen peroxide where one or both of the hydrogen atoms have been replaced by an organic radical. Organic peroxides can pose an explosion hazard (detonation or deflagration) or they can be shock sensitive. They can also decompose into various unstable compounds over an extended period of time.

Class I. Those formulations that are capable of deflagration but not detonation.

Class II. Those formulations that burn very rapidly and that pose a moderate reactivity hazard.

Class III. Those formulations that burn rapidly and that pose a moderate reactivity hazard.

Class IV. Those formulations that burn in the same manner as ordinary combustibles and that pose a minimal reactivity hazard.

Class V. Those formulations that burn with less intensity than ordinary combustibles or do not sustain combustion and that pose no reactivity hazard.

Unclassified detonable. Organic peroxides that are capable of detonation. These peroxides pose an extremely high explosion hazard through rapid explosive decomposition.

ORGANIZED CAMPS. *See Section 450, Group C Occupancy.*

[BS] ORTHOGONAL. To be in two horizontal directions, at 90 degrees (1.57 rad) to each other.

[BS] OTHER STRUCTURES. This definition applies only to Chapters 16 through 23.

Structures, other than buildings, for which loads are specified in Chapter 16.

OUTPATIENT CLINIC. See "Clinic, outpatient."

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OVERFLOW SYSTEM. *The system which includes perimeter-type overflow gutters, surface skimmers, surge or collector tanks, other surface water collective system components and their interconnecting piping.*

[BE] OVERHEAD DOORSTOP. Door hardware mounted at the top of the door and to the door frame that limits the swing of the door in the opening.

[A] OWNER. Any person, agent, operator, entity, firm or corporation having any legal or equitable interest in the property; or recorded in the official records of the state, county or municipality as holding an interest or title to the property; or otherwise having possession or control of the property, including the guardian of the estate of any such person, and the executor or administrator of the estate of such person if ordered to take possession of real property by a court.

[F] OXIDIZER. A material that readily yields oxygen or other oxidizing gas, or that readily reacts to promote or initiate combustion of combustible materials and, if heated or contaminated, can result in vigorous self-sustained decomposition.

Class 4. An oxidizer that can undergo an *explosive* reaction due to contamination or exposure to thermal or physical shock and that causes a severe increase in the burning rate of combustible materials with which it comes into contact. Additionally, the oxidizer causes a severe increase in the burning rate and can cause spontaneous ignition of combustibles.

Class 3. An oxidizer that causes a severe increase in the burning rate of combustible materials with which it comes in contact.

Class 2. An oxidizer that will cause a moderate increase in the burning rate of combustible materials with which it comes in contact.

Class 1. An oxidizer that does not moderately increase the burning rate of combustible materials.

[F] OXIDIZING GAS. A gas that can support and accelerate combustion of other materials more than air does.

[BS] PANEL (PART OF A STRUCTURE). The section of a floor, wall or roof comprised between the supporting frame of two adjacent rows of columns and girders or column bands of floor or roof construction.

[BE] PANIC HARDWARE. A door-latching assembly incorporating a device that releases the latch upon the application of a force in the direction of egress travel. See "Fire exit hardware."

[BS] PARTICLEBOARD. A generic term for a panel primarily composed of cellulosic materials (usually wood), generally in the form of discrete pieces or particles, as distinguished from fibers. The cellulosic material is combined with synthetic resin or other suitable bonding system by a process in which the interparticle bond is created by the bonding system under heat and pressure.

PASSAGE DOOR. [HCD 1-AC] *A door other than an exit door through which persons may traverse.*

PASSENGER ELEVATOR. [DSA-AC] *See "Elevator, Passenger"*

PASSENGER ELEVATOR. [HCD 1 & HCD 2] *An elevator used primarily to carry passengers. For additional information, see California Code of Regulations, Title 8, Division 1, Chapter 4.*

PASSIVE SOLAR ENERGY COLLECTOR. [HCD 1 & HCD 2] *Uses architectural components, rather than mechanical components, to provide heating or cooling for a building interior.*

PATH OF TRAVEL. [DSA-AC] *An identifiable accessible route within an existing site, building or facility by means of which a particular area may be approached, entered and exited, and which connects a particular area with an exterior approach (including sidewalks, streets and parking areas), an entrance to the facility, and other parts of the facility. When alterations, structural repairs or additions are made to existing buildings or facilities, the term "path of travel" also includes the toilet and bathing facilities, telephones, drinking fountains and signs serving the area of work.*

PEDESTRIAN. [HCD 1-AC] *An individual who moves in walking areas with or without the use of walking assistive devices such as crutches, leg braces, wheelchairs, white cane, service animal, etc.*

PEDESTRIAN WAY. *A route by which a pedestrian may pass.*

PEER REVIEW. [OSHPD 1, 1R, 2, 4 & 5] *Peer review refers to the procedure contained in California Building Code Section 1617A.1.41.*

[A] PEER REVIEW. An independent and objective technical review conducted by an approved third party.

[BF] PENETRATION FIRESTOP. A through-penetration firestop or a membrane-penetration firestop.

[BG] PENTHOUSE. An enclosed, unoccupiable rooftop structure used for sheltering mechanical and electrical equipment, tanks, elevators and related machinery, stairways, and vertical shaft openings.

[BS] PERFORMANCE CATEGORY. A designation of wood structural panels as related to the panel performance used in Chapter 23.

[BF] PERIMETER FIRE CONTAINMENT SYSTEM. An assemblage of specific materials or products that is designed to resist for a prescribed period of time the passage of fire through voids created at the intersection of exterior curtain wall assemblies and fire-resistance-rated floor or floor/ceiling assemblies.

PERMANENT. [DSA-AC] *Facilities which, are intended to be used for periods longer than those designated in this code under the definition of "Temporary."*

[BS] PERMANENT INDIVIDUAL TRUSS MEMBER DIAGONAL BRACING (PITMDB). Structural member or assembly intended to permanently stabilize the *PITMRs*.

[BS] PERMANENT INDIVIDUAL TRUSS MEMBER RESTRAINT (PITMR). Restraint that is used to prevent local buckling of an individual truss chord or web member because of the axial forces in the individual truss member.

PERMANENT PORTABLE BUILDING. [SFM] *A portable building that is used to serve or house students and is certified as a permanent building on a new public school campus by the public school administration shall comply with the requirements of new campus buildings.*

[A] PERMIT. An official document or certificate issued by the building official that authorizes performance of a specified activity.

[A] PERSON. An individual, heirs, executors, administrators or assigns, and also includes a firm, partnership or corporation, its or their successors or assigns, or the agent of any of the aforesaid.

[BG] PERSONAL CARE SERVICE. The care of persons who do not require medical care. Personal care involves responsibility for the safety of the persons while inside the building.

PERSONS WITH DISABILITIES. [HCD 1-AC] *For purposes of Chapter 11A, "Persons with disabilities" includes, but is not limited to, any physical or mental disability as defined in Government Code Section 12926.*

PERSONS WITH INTELLECTUAL DISABILITIES, PROFOUNDLY OR SEVERELY. *Shall mean any persons with intellectual disabilities who is unable to evacuate a building unassisted during emergency conditions.*

Note: *The determination as to such incapacity shall be made by the Director of the State Department of Public Health or his or her designated representative pursuant to Health and Safety Code Section 13131.3.*

[BE] PHOTOLUMINESCENT. Having the property of emitting light that continues for a length of time after excitation by visible or invisible light has been removed.

[BS] PHOTOVOLTAIC (PV) MODULE. A complete, environmentally protected unit consisting of solar cells, optics and other components, exclusive of tracker, designed to generate DC power when exposed to sunlight.

[BS] PHOTOVOLTAIC (PV) PANEL. A collection of modules mechanically fastened together, wired and designed to provide a field-installable unit.

[BS] PHOTOVOLTAIC (PV) PANEL SYSTEM. A system that incorporates discrete photovoltaic panels, that converts solar radiation into electricity, including rack support systems.

[BS] PHOTOVOLTAIC (PV) PANEL SYSTEM, GROUND MOUNTED. An independent photovoltaic (PV) panel system without usable space underneath, installed directly on the ground.

[BS] PHOTOVOLTAIC (PV) SUPPORT STRUCTURE, ELEVATED. An independent photovoltaic (PV) panel support structure designed with usable space underneath with minimum clear height of 7 feet 6 inches (2286 mm), intended for secondary use such as providing shade or parking of motor vehicles.

[F] PHYSICAL HAZARD. A chemical for which there is evidence that it is a combustible liquid, cryogenic fluid, explosive, flammable (solid, liquid or gas), organic peroxide (solid or liquid), oxidizer (solid or liquid), oxidizing gas, pyrophoric (solid, liquid or gas), unstable (reactive) material (solid, liquid or gas) or water-reactive material (solid or liquid).

[F] PHYSIOLOGICAL WARNING THRESHOLD LEVEL. A concentration of airborne contaminants, normally expressed in parts per million (ppm) or milligrams per cubic meter (mg/m^3), that represents the concentration at which persons can sense the presence of the contaminant due to odor, irritation or other quick-acting physiological response. When used in conjunction with the permissible exposure limit (PEL) the physiological warning threshold levels are those consistent with the classification system used to establish the PEL. See the definition of "Permissible exposure limit (PEL)" in the *California Fire Code*.

PICTOGRAM. *A pictorial symbol that represents activities, facilities or concepts.*

PLACE OF PUBLIC ACCOMMODATION. *A facility operated by a private entity whose operations affect commerce and fall within at least one of the following categories:*

(1) Place of lodging, except for an establishment located within a facility that contains not more than five rooms for rent or hire and that actually is occupied by the proprietor of the establishment as the residence of the proprietor. For purposes of this code, a facility is a "place of lodging" if it is

(i) An inn, hotel or motel; or

(ii) A facility that

(A) Provides guest rooms for sleeping for stays that primarily are short-term in nature (generally 30 days or less) where the occupant does not have the right to return to a specific room or unit after the conclusion of his or her stay; and

(B) Provides guest rooms under conditions and with amenities similar to a hotel, motel or inn, including the following:

(1) On- or off-site management and reservations service;

(2) Rooms available on a walk-up or call-in basis;

(3) Availability of housekeeping or linen service; and

(4) Acceptance of reservations for a guest room type without guaranteeing a particular unit or room until check-in, and without a prior lease or security deposit.

(2) A restaurant, bar or other establishment serving food or drink;

(3) A motion picture house, theater, concert hall, stadium or other place of exhibition or entertainment;

(4) An auditorium, convention center, lecture hall or other place of public gathering;

(5) A bakery, grocery store, clothing store, hardware store, shopping center or other sales or rental establishment;

(6) A laundromat, dry-cleaner, bank, barber shop, beauty shop, travel service, shoe repair service, funeral parlor, gas station, office of an accountant or lawyer, pharmacy, insurance office, professional office of a health care provider, hospital or other service establishment;

(7) *A terminal, depot or other station used for specified public transportation;*

(8) *A museum, library, gallery or other place of public display or collection;*

(9) *A park, zoo, amusement park or other place of recreation;*

(10) *A nursery, elementary, secondary, undergraduate or postgraduate private school, or other place of education;*

(11) *A day-care center, senior citizen center, homeless shelter, food bank, adoption agency or other social service center establishment;*

(12) *A gymnasium, health spa, bowling alley, golf course or other place of exercise or recreation;*

(13) *A religious facility;*

(14) *An office building; and*

(15) *A public curb or sidewalk.*

PLACE OF RELIGIOUS WORSHIP. See "Religious worship, place of."

[BF] PLASTIC COMPOSITE. A generic designation that refers to wood/plastic composites, plastic lumber and similar materials.

[BF] PLASTIC GLAZING. Plastic materials that are glazed or set in a frame or sash or are otherwise supported.

[BF] PLASTIC LUMBER. A manufactured product made primarily of plastic materials (filled or unfilled) which is generally rectangular in cross section.

[BG] PLATFORM. A raised area within a building used for worship, the presentation of music, plays or other entertainment; the head table for special guests; the raised area for lecturers and speakers; boxing and wrestling rings; theater-in-the-round stages; and similar purposes wherein, other than horizontal sliding curtains, there are no overhead hanging curtains, drops, scenery or stage effects other than lighting and sound. A temporary platform is one installed for not more than 30 days.

PLATFORM (WHEELCHAIR) LIFT. *A hoisting and lowering mechanism equipped with a car or platform or support that serves two landings of a building or structure and is designed to carry a passenger or passengers and/or luggage or other material a vertical distance as may be allowed.*

PLAY AREA. [DSA-AC] *A portion of a site containing play components designed and constructed for children.*

PLAY COMPONENT. [DSA-AC] *An element intended to generate specific opportunities for play, socialization or learning. Play components are manufactured or natural; and are stand-alone or part of a composite play structure.*

[BG] PLAY STRUCTURE. A structure composed of one or more components, where the user enters a play environment.

POINT-OF-SALE DEVICE. [DSA-AC] *A device used for the purchase of a good or service where a personal identification number (PIN), zip code or signature is required.*

[BF] POLYPROPYLENE SIDING. A shaped material, made principally from polypropylene homopolymer, or copolymer, which in some cases contains fillers or reinforcements, that is used to clad exterior walls of buildings.

POOL. *A constructed or prefabricated artificial basin, chamber or tank intended to be used primarily by bathers, and not for cleaning of the body or for individual therapeutic use.*

POOL USER. *A person using a pool and ancillary facilities for the purpose of water activities such as diving, swimming or wading.*

POOL VOLUME. *The amount of water expressed in gallons (liters) that a pool holds when filled.*

[BS] PORCELAIN TILE. Ceramic tile having an absorption of 0.5 percent or less in accordance with Table 10 of ANSI A137.1, or Tables 4 or 5 of ANSI A137.3.

[BS] POSITIVE ROOF DRAINAGE. A design that accounts for deflections from all design loads and has sufficient additional slope to ensure that drainage of the roof occurs within 48 hours of precipitation.

POWDER ROOM. *A room containing a water closet (toilet) and a lavatory, and which is not defined as a bathroom.*

POWER-ASSISTED DOOR. [DSA-AC] *A door used for human passage with a mechanism that helps to open the door, or relieves the opening resistance of a door, upon the activation of a switch or a continued force applied to the door itself.*

[BE] POWER-ASSISTED DOOR. Swinging door which opens by reduced pushing or pulling force on the door-operating hardware. The door closes automatically after the pushing or pulling force is released and functions with decreased forces. See "Low-energy power-operated door" and "Power-operated door."

[BE] POWER-OPERATED DOOR. Swinging, sliding, or folding door which opens automatically when approached by a pedestrian or opens automatically upon an action by a pedestrian. The door closes automatically and includes provisions such as presence sensors to prevent entrapment. See "Low-energy power-operated door" and "Power-assisted door."

[BS] PRECAST CONCRETE DIAPHRAGM. See Section 1905.2.

[BS] PREFABRICATED WOOD I-JOIST. Structural member manufactured using sawn or structural composite lumber flanges and wood structural panel webs bonded together with exterior exposure adhesives, which forms an "I" cross-sectional shape.

[BS] PRESERVATIVE-TREATED WOOD. Wood products that, when impregnated with chemicals by a pressure process or other means during manufacture, exhibit reduced susceptibility to damage by fungi, insects or marine borers.

[BS] PRESTRESSED MASONRY. Masonry in which internal stresses have been introduced to counteract potential tensile stresses in masonry resulting from applied loads.

PRIMARY ENTRY. [HCD 1-AC] *The principal entrance through which most people enter the building, as designated by the building official.*

PRIMARY ENTRY LEVEL. [HCD 1-AC] *The floor or level of the building on which the primary entry is located.*

[BG] PRIMARY STRUCTURAL FRAME. The primary structural frame shall include all of the following structural members:

1. The columns.
2. Structural members having direct connections to the columns, including girders, beams, trusses and spandrels.
3. Members of the floor construction and roof construction having direct connections to the columns.
4. Members that are essential to the vertical stability of the primary structural frame under gravity loading.

PRIVATE BUILDING OR FACILITY. [DSA-AC] *A place of public accommodation or a commercial building or facility subject to Chapter 1, Section 1.9.1.2.*

[BG] PRIVATE GARAGE. A building or portion of a building in which motor vehicles used by the owner or tenants of the building or buildings on the premises are stored or kept, without provisions for repairing or servicing such vehicles for profit.

PRIVATE POOL. *Any constructed pool, permanent or portable, that is intended for noncommercial use as a swimming pool by not more than three owner families and their guests.*

Note: *A single-family residence is a Group R, Division 3 occupancy.*

PROFESSIONAL OFFICE OF A HEALTH CARE PROVIDER. [DSA-AC] *A location where a person or entity, regulated by the State to provide professional services related to the physical or mental health of an individual, makes such services available to the public. The facility housing the professional office of a health care provider only includes floor levels housing at least one health care provider, or any floor level designed or intended for use by at least one health care provider.*

PROJECT INSPECTOR. [DSA-SS, DSA-SS/CC] *The person approved to provide inspection in accordance with the California Administrative Code, Section 4-333(b). The term "project inspector" is synonymous with "inspector of record."*

[BG] PROSCENIUM WALL. The wall that separates the *stage* from the auditorium or assembly seating area.

PROTECTIVE SOCIAL CARE FACILITY. [SFM] *A facility housing persons, who are referred, placed or caused to be placed in the facility, by any governmental agency and for whom the services, or a portion thereof, are paid for by any governmental agency. These occupancies shall include, but are not limited to, those commonly referred to as "assisted living facilities," "social rehabilitation facilities," "certified family care homes," "out-of-home placement facilities," and "halfway houses."*

PSYCHIATRIC HOSPITALS. See "Hospitals and psychiatric hospitals."

PUBLIC BUILDING OR FACILITY. [DSA-AC] *A building or facility or portion of a building or facility designed, constructed, or altered by, on behalf of, or for the use of a public entity subject to Chapter 1, Section 1.9.1.1.*

PUBLIC ENTITY. *Any state or local government; any department, agency, special-purpose district, or other instrumentality of a state or local government.*

[BE] PUBLIC ENTRANCE. An entrance that is not a service entrance or a restricted entrance.

PUBLIC HOUSING. [DSA-AC & HCD 1-AC] *Housing facilities constructed or altered by, for, or on behalf of a public entity, or constructed or altered as part of a public entity's program to provide housing pursuant to United States Code of Federal Regulations, 28 CFR Part 35, Section 35.102(a), including but not limited to the following:*

1. *One- or two-family dwelling units or congregate residences;*
2. *Buildings or complexes with three or more residential dwelling units;*
3. *Homeless shelters, group homes, halfway houses and similar social service establishments;*
4. *Transient lodging, such as hotels, motels, hostels and other facilities providing accommodations of a short-term nature of not more than 30 days duration;*
5. *Housing at a place of education, such as housing on or serving a public school, public college or public university.*

Note: *A public entity's program to provide housing may include but is not limited to: the allocation of local, state or federal financial assistance, Community Development Block Grants, Low Income Housing Tax Credits, the California Multifamily Housing Program, loan agreements and housing bonds. Examples that are not considered a public entity's program to provide housing may include but are not limited to: density bonuses, the receipt of public funds for the installation of energy efficiency features, seismic strengthening, water conservation and fire safety features. For additional information see "Guide to Public Housing Regulated in Chapter 11B of the California Building Code" and the "California Access Compliance Advisory Reference Manual" available on the Division of the State Architect's website.*

PUBLIC POOL. *A pool other than a private pool.*

PUBLIC USE. [DSA-AC] *Interior or exterior rooms, spaces or elements that are made available to the public. Public use may be provided at a building or facility that is privately or publicly owned. Private interior or exterior rooms, spaces or elements associated with a residential dwelling unit provided by a public housing program or in a public housing facility are not public use areas and shall not be required to be made available to the public.*

[A] PUBLIC WAY. A street, alley or other parcel of land open to the outside air leading to a street, that has been deeded, dedicated or otherwise permanently appropriated to the public for public use and which has a clear width and height of not less than 10 feet (3048 mm).

[BS] PUBLIC-OCCUPANCY TEMPORARY STRUCTURE. Any building or structure erected for a period of 1 year or less that serves an assembly occupancy or other public use. ***[DSA-SS, DSA-SS/CC]*** *The classification of public-occupancy temporary structure shall not be applied to any school building as defined in Section 4-314 of the California Administrative Code.*

PUBLIC USE AREAS. [HCD 1-AC] *Interior or exterior rooms or spaces of a building or facility that are made available to the general public and do not include common use areas. Public use areas may be provided at a building or facility that is privately or publicly owned.*

[BE] PUBLIC-USE AREAS. Interior or exterior rooms or spaces that are made available to the general public.

[BG] PUZZLE ROOM. A puzzle room is a type of special amusement area in which occupants are encouraged to solve a challenge to escape from a room or series of rooms. A puzzle room is sometimes referred to as an escape room.

[F] PYROPHORIC. A chemical with an auto-ignition temperature in air, at or below a temperature of 130°F (54.4°C).

[F] PYROTECHNIC COMPOSITION. A chemical mixture that produces visible light displays or sounds through a self-propagating, heat-releasing chemical reaction which is initiated by ignition.

QUALIFIED HISTORIC BUILDING OR FACILITY. [DSA-AC] *A building or facility that is listed in or eligible for listing in the National Register of Historic Places, or designated as historic under an appropriate State or local law. See C.C.R. Title 24, Part 8.*

QUALITY ASSURANCE (QA). [DSA-SS, DSA-SS/CC, OSHPD 1R, 1, 2, 4 & 5] *Special inspections and testing provided by an approved agency employed by the Owner. Project specific testing required by approved construction documents shall be performed by the approved agency responsible for Quality Assurance (QA), unless approved otherwise by the building official.*

QUALITY CONTROL (QC). [DSA-SS, DSA-SS/CC, OSHPD 1R, 1, 2, 4 & 5] *Inspections and materials/functionality testing provided by the fabricator, erector, manufacturer or other responsible contractor as applicable.*

[BF] RADIANT BARRIER. A material having a low-emittance surface of 0.1 or less installed in building assemblies.

[BF] RAINSCREEN SYSTEM. An assembly applied to the exterior side of an exterior wall and consisting of, at minimum, an outer layer, an inner layer and a cavity between them sufficient for the passive removal of liquid water and water vapor.

[BS] RAISED-DECK SYSTEM. (For application to Chapter 15 only). A system consisting of decking or pavers supported by pedestals installed over a roof assembly to provide a walking surface.

[BE] RAMP. A walking surface that has a running slope steeper than 1 unit vertical in 20 units horizontal (5-percent slope).

RAMP, EXIT ACCESS. See "Exit access ramp."

RAMP, EXTERIOR EXIT. See "Exterior exit ramp."

RAMP, INTERIOR EXIT. See "Interior exit ramp."

[BG] RAMP-ACCESS OPEN PARKING GARAGES. Open parking garages employing a series of continuously rising floors or a series of interconnecting ramps between floors permitting the movement of vehicles under their own power from and to the street level.

REASONABLE PORTION. [DSA-AC] T*hat segment of a building, facility, area, space or condition, which would normally be necessary if the activity therein is to be accessible by persons with disabilities.*

RECESSED STEPS. *A riser/tread or series of risers/treads extending down into the deck with the bottom riser or tread terminating at the pool wall (thus creating a "stairwell").*

RECESSED TREADS. *A series of vertically spaced cavities in the pool wall creating tread areas for step holes.*

RECIRCULATION SYSTEM. *The interconnected system traversed by the recirculated water from the pool until it is returned to the pool, i.e., from the pool through the collector or surge tank, recirculation pump, filters, chemical treatment and heater (if provided), and returned to the pool.*

RECOMMEND. [DSA-AC, HCD 1 & HCD 2] *Does not require mandatory acceptance, but identifies a suggested action that shall be considered for the purpose of providing a greater degree of accessibility to persons with disabilities.*

[A] RECORD DRAWINGS. Drawings ("as builts") that document the location of all devices, appliances, wiring sequences, wiring methods and connections of the components of a fire alarm system as installed.

[BF] REFLECTIVE PLASTIC CORE INSULATION. An insulation material packaged in rolls, that is less than $^{1}/_{2}$ inch (12.7 mm) thick, with not less than one exterior low-emittance surface (0.1 or less) and a core material containing voids or cells.

[A] REGISTERED DESIGN PROFESSIONAL. An individual who is registered or licensed to practice their respective design profession as defined by the statutory requirements of the professional registration laws of the state or jurisdiction in which the project is to be constructed.

[A] REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE. A registered design professional engaged by the owner or the owner's authorized agent to review and coordinate certain aspects of the project, as determined by the building official, for compatibility with the design of the building or structure, including submittal documents prepared by others, deferred submittal documents and phased submittal documents.

[BG] RELIGIOUS WORSHIP, PLACE OF. A building or portion thereof intended for the performance of religious services.

[A] RELOCATABLE BUILDING. A partially or completely assembled building constructed and designed to be reused multiple times and transported to different building sites.

RELOCATABLE BUILDING (PUBLIC SCHOOL). *Any building with an integral floor structure which is capable of being readily moved. (See Education Code Section 17350.) Relocatable buildings that are to be placed on substandard foundations not complying with the requirements of Part 2, Title 24, C.C.R., require a statement from the school district stating that the durability requirements for those foundations may be waived and acknowledging the temporary nature of the foundations.*

REMODELING. [DSA-AC] *See "Alteration."*

REMOVED FROM ACUTE CARE SERVICE. [OSHPD 1R] *Buildings that previously provided basic and/or supplemental services, as defined in Section 1224.3 that have been removed from acute care service in compliance with Part 10 California Existing Building Code Chapter 3A through a project approved by OSHPD, and remain under the jurisdiction of OSHPD.*

[A] REPAIR. The reconstruction, replacement or renewal of any part of an existing building for the purpose of its maintenance or to correct damage.

[BG] REPAIR GARAGE. A building, structure or portion thereof used for servicing or repairing motor vehicles.

[BS] REROOFING. The process of recovering or replacing an existing roof covering. See "Roof recover" and "Roof replacement."

[BG] RESIDENTIAL AIRCRAFT HANGAR. An accessory building less than 2,000 square feet (186 m^2) and 20 feet (6096 mm) in building height constructed on a one- or two-family property where aircraft are stored. Such use will be considered as a residential accessory use incidental to the dwelling.

RESIDENTIAL CARE FACILITY FOR THE CHRONICALLY ILL (RCF/CI). *As termed, means a housing arrangement with a maximum capacity of 25 residents that provides a range of services to residents who have chronic, life-threatening illnesses.*

RESIDENTIAL CARE FACILITY FOR THE ELDERLY (RCFE). *As defined in Health and Safety Code Section 1569.2, shall mean a facility with a housing arrangement chosen voluntarily by persons 60 years of age or over, or their authorized representative, where varying levels and intensities of care and supervision, protective supervision or personal care are provided, based on their varying needs, as determined in order to be admitted and to remain in the facility. Persons under 60 years of age with compatible needs, as determined by the Department of Social Services in regulations, may be allowed to be admitted or retained in a residential-care facility for the elderly.*

Pursuant to Health and Safety Code Section 13133, regulations of the state fire marshal pertaining to Group R-2.1, Occupancies classified as residential facilities (RF) and residential- care facilities for the elderly (RCFE) shall apply uniformly throughout the state and no city, county, city and county, including a charter city or charter county, or fire protection district shall adopt or enforce any ordinance or local rule or regulation relating to fire and panic safety which is in consistent with these regulations. A city, county, city and county, including a charter city or charter county may pursuant to Health and Safety Code Section 13143.5, or a fire protection district may pursuant to Health and Safety Code Section 13869.7, adopt standards more stringent than those adopted by the state fire marshal that are reasonably necessary to accommodate local climate, geological or topographical conditions relating to roof coverings for residential-care facilities for the elderly.

RESIDENTIAL DWELLING UNIT. [DSA-AC] *A unit intended to be used as a residence that is primarily long-term in nature. Residential dwelling units do not include transient lodging, inpatient medical care, licensed long-term care, and detention or correctional facilities.*

RESIDENTIAL FACILITY (RF). *As defined in Section 1502 of the Health and Safety Code, shall mean any family home, group care facility or similar facility determined by the director of Social Services, for 24-hour nonmedical care of persons in need of personal services, supervision or assistance essential for sustaining the activities of daily living or for the protection of the individual. Such facilities include small family homes and social rehabilitation facilities.*

Pursuant to Health and Safety Code Section 13133, regulations of the state fire marshal pertaining to Group R Occupancies classified as residential facilities (RF) and residential-care facilities for the elderly (RCFE) shall apply uniformly throughout the state and no city, county, city and county, including a charter city or charter county, or fire protection district shall adopt or enforce any ordinance or local rule or regulation relating to fire and panic safety which is in consistent with these regulations. A city, county, city and county, including a charter city or charter county may pursuant to Health and Safety Code Section 13143.5, or a fire protection district may pursuant to Health and Safety Code Section 13869.7, adopt standards more stringent than those adopted by the state fire marshal that are reasonably necessary to accommodate local climate, geological or topographical conditions relating to roof coverings for residential-care facilities for the elderly.

[BS] RESISTANCE FACTOR. A factor that accounts for deviations of the actual strength from the nominal strength and the manner and consequences of failure (also called "strength reduction factor").

RESTRAINT. [SFM] *The physical retention of a person within a room, cell or cell block, holding cells, temporary holding cell, rooms or area, holding facility, secure interview rooms, courthouse holding facilities, courtroom docks, or similar buildings or portions thereof by any means, or within the exterior walls of a building by means of locked doors inoperable by the person restrained. Restraint shall also mean the physical binding, strapping or similar restriction of any person in a chair, walker, bed or other contrivance for the purpose of deliberately restricting the free movement of ambulatory persons.*

Restraint shall not be construed to include nonambulatory persons nor shall it include the use of bandage material, strip sheeting or other fabrics or materials (soft ties) used to restrain persons in hospital-type beds or wheelchairs to prevent injury, provided an approved method of quick release is maintained.

Facilities employing the use of soft ties, however, shall be classified as a building used to house nonambulatory persons. Restraint shall not be practiced in licensed facilities classified as Group R-2.1, R-3.1 and R-4 occupancies unless constructed as a Group I-3 occupancy. For Group I-3 Occupancies see Section 408.1.1.

RESTRICTED AREA. [OSHPD 1, 2, 3, 4 & 5] *(See Chapter 12, Section 1224.3 for defined term.)*

[BF] RESPONSIVE VAPOR RETARDER. A vapor retarder material complying with a vapor retarder class of Class I or II, but that also has a vapor permeance of 1 perm or greater in accordance with ASTM E96, water method (Procedure B).

[BE] RESTRICTED ENTRANCE. An entrance that is made available for common use on a controlled basis, but not public use, and that is not a service entrance.

[BG] RETRACTABLE AWNING. A retractable awning is a cover with a frame that retracts against a building or other structure to which it is entirely supported.

RETROFIT. [DSA-SS, DSA-SS/CC, OSHPD 1, 1R, 2, 4 & 5] *The construction of any new element or system, or the alteration of any existing element or system required to bring an existing building, or portion thereof, conforming to earlier code requirements, into conformance with standards of the currently effective California Building Standards Code.*

RISER. *The upright part between two adjacent stair treads, between either an upper or lower landing and an adjacent stair tread, or between two adjacent landings.*

[BS] RISK CATEGORY. A categorization of buildings and other structures for determination of flood, wind, tornado, snow, ice and earthquake loads based on the risk associated with unacceptable performance.

[BS] ROOF ASSEMBLY (For application to Chapter 15 only). A system designed to provide weather protection and resistance to design loads. The system consists of a roof covering and roof deck or a single component serving as both the roof covering and the roof deck. A roof assembly can include an underlayment, a thermal barrier, insulation or a vapor retarder.

[BS] ROOF COATING. A fluid-applied, adhered coating used for roof maintenance or roof repair, or as a component of a roof covering system or roof assembly.

[BS] ROOF COVERING. The covering applied to the roof deck for weather resistance, fire classification or appearance.

ROOF COVERING SYSTEM. See "Roof assembly."

[BS] ROOF DECK. The flat or sloped surface constructed on top of the exterior walls of a building or other supports for the purpose of enclosing the story below, or sheltering an area, to protect it from the elements, not including its supporting members or vertical supports.

ROOF DRAINAGE, POSITIVE. See "Positive roof drainage."

[BS] ROOF RECOVER. The process of installing an additional roof covering over a prepared existing roof covering without removing the existing roof covering.

[BS] ROOF REPAIR. Reconstruction or renewal of any part of an existing roof for the purposes of correcting damage or restoring pre-damage condition.

[BS] ROOF REPLACEMENT. The process of removing the existing roof covering, repairing any damaged substrate and installing a new roof covering.

[BG] ROOF VENTILATION. The natural or mechanical process of supplying conditioned or unconditioned air to, or removing such air from, attics, cathedral ceilings or other enclosed spaces over which a roof assembly is installed.

[BG] ROOFTOP STRUCTURE. A structure erected on top of the roof deck or on top of any part of a building.

RUGGED EQUIPMENT. [DSA-SS, DSA-SS/CC] *Rugged equipment refers to an ampleness of construction that gives such equipment the ability to survive earthquake strong motions without significant loss of function.*

[BS] RUNNING BOND. The placement of masonry units such that head joints in successive courses are horizontally offset at least one-quarter the unit length.

RUNNING SLOPE. *The slope that is parallel to the direction of travel. (As differentiated from the definition of "Cross Slope.")*

[BG] SALLYPORT. A security vestibule with two or more doors or gates where the intended purpose is to prevent continuous and unobstructed passage by allowing the release of only one door or gate at a time.

SANITARY FACILITY. [HCD 1 & HCD 1-AC] *Any single water closet, urinal, lavatory, bathtub or shower, or a combination thereof, together with the room or space in which they are housed.*

[BE] SCISSOR STAIRWAY. Two interlocking stairways providing two separate paths of egress located within one exit enclosure.

[BS] SCUPPER. An opening in a wall or parapet that allows water to drain from a roof.

[BG] SECONDARY STRUCTURAL MEMBERS. The following structural members shall be considered secondary members and not part of the primary structural frame:

1. Structural members not having direct connections to the columns.
2. Members of the floor construction and roof construction not having direct connections to the columns.
3. Bracing members that are not designated as part of a primary structural frame or bearing wall.

SECURE INTERVIEW ROOMS. *A lockable room used to hold and interview detainees for further processing.*

[BS] SEISMIC DESIGN CATEGORY. A classification assigned to a structure based on its risk category and the severity of the design earthquake ground motion at the site.

[BS] SEISMIC FORCE-RESISTING SYSTEM. That part of the structural system that has been considered in the design to provide the required resistance to the prescribed seismic forces.

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[BF] SELF-CLOSING. As applied to a fire door or other opening protective, means equipped with a device that will ensure closing after having been opened.

[BE] SELF-LUMINOUS. Illuminated by a self-contained power source, other than batteries, and operated independently of external power sources.

SELF-PRESERVATION, INCAPABLE OF. See "Incapable of self-preservation."

[BG] SELF-SERVICE STORAGE FACILITY. Real property designed and used for the purpose of renting or leasing individual storage spaces to customers for the purpose of storing and removing personal property on a self-service basis.

SELF-SERVICE STORAGE. [DSA-AC] *Building or facility designed and used for the purpose of renting or leasing individual storage spaces to customers for the purpose of storing and removing personal property on a self-service basis.*

[F] SERVICE CORRIDOR. A fully enclosed passage used for transporting HPM and purposes other than required means of egress.

[BE] SERVICE ENTRANCE. An entrance intended primarily for delivery of goods or services.

[BS] SERVICE LIFE. The period of time that a structure serves its intended purpose. For temporary structures, this shall be the cumulative time of service for sequential temporary events that may occur in multiple locations. For public-occupancy temporary structures, this is assumed to be a minimum of 10 years.

[BF] SHAFT. An enclosed space extending through one or more stories of a building, connecting vertical openings in successive floors, or floors and roof.

[BF] SHAFT ENCLOSURE. The walls or construction forming the boundaries of a shaft.

SHALL. [DSA-AC] *Denotes a mandatory specification or requirement.*

[BS] SHALLOW FOUNDATION. A shallow foundation is an individual or strip footing, a mat foundation, a slab-on-grade foundation or a similar foundation element.

SHALLOW POOL. *A pool that has a maximum depth of less than 6 feet (1829 mm).*

[BS] SHEAR WALL. This definition applies only to Chapter 23.

A wall designed to resist lateral forces parallel to the plane of a wall.

Shear wall, perforated. A wood structural panel sheathed wall with openings, that has not been specifically designed and detailed for force transfer around openings.

Shear wall segment, perforated. A section of shear wall with full-height sheathing that meets the height-to-width ratio limits of Section 4.3.4 of AWC SDPWS.

[BS] SHINGLE FASHION. A method of installing roof or wall coverings, water-resistive barriers, flashing or other building components such that upper layers of material are placed overlapping lower layers of material to provide for drainage via gravity and moisture control.

SHOPPING CENTER (OR SHOPPING MALL). [DSA-AC] *One or more sales or rental establishments or stores. A shopping center may include a series of buildings on a common site, connected by a common pedestrian access route on, above or below the ground floor, that is either under common ownership or common control or developed either as one project or as a series of related projects. For the purposes of this section, "shopping center" or "shopping mall" includes a covered mall building.*

SHOULD. [HCD 1 & HCD 2] *See "Recommend."*

SIDEWALK. *A surfaced pedestrian way contiguous to a street used by the public. (As differentiated from the definition of "Walk.")*

SIGN. [HCD 1-AC, DSA-AC] *An element composed of displayed textual, verbal, symbolic, tactile and/or pictorial information.*

SIGNIFICANT LOSS OF FUNCTION. [DSA-SS, DSA-SS/CC & OSHPD 1, 1R, 2, 4 & 5] *Significant loss of function for equipment or components means the equipment or component cannot be restored to its original function by competent technicians after a design earthquake because the equipment or component require parts that are not normally stocked by the owner or not readily available.*

SINGLE-ACCOMMODATION SANITARY FACILITY. [HCD 1-AC] *A room that has not more than one of each type of sanitary fixture, is intended for use by only one person at a time, has no partition around the toilet, and has a door that can be locked on the inside by the room occupant.*

[BS] SINGLE-PLY MEMBRANE. A roofing membrane that is field applied using one layer of membrane material (either homogeneous or composite) rather than multiple layers.

[F] SINGLE-STATION SMOKE ALARM. An assembly incorporating the detector, the control equipment and the alarm-sounding device in one unit, operated from a power supply either in the unit or obtained at the point of installation.

SINK. *A fixed bowl or basin with running water and drainpipe, as in a kitchen or laundry, for washing dishes, clothing, etc. (As differentiated from the definition of "Lavatory.")*

[BG] SITE. A parcel of land bounded by a lot line or a designated portion of a public right-of-way.

[BS] SITE CLASS. A classification assigned to a site based on the types of soils present and their engineering properties as defined in Chapter 20 of ASCE/SEI-7.

SITE DEVELOPMENT. [HCD 1-AC] *"On-site" and "off-site" work, including, but not limited to, walks, sidewalks, ramps, curbs, curb ramps, parking facilities, stairs, planting areas, pools, promenades, exterior gathering or assembly areas and raised or depressed paved areas.*

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[BG] SITE-FABRICATED STRETCH SYSTEM. A system, fabricated on site and intended for acoustical, tackable or aesthetic purposes, that is composed of three elements:

1. A frame (constructed of plastic, wood, metal or other material) used to hold fabric in place.
2. A core material (infill, with the correct properties for the application).
3. An outside layer, composed of a textile, fabric or vinyl, that is stretched taut and held in place by tension or mechanical fasteners via the frame.

[BS] SKYLIGHT, UNIT. A factory-assembled, glazed fenestration unit, containing one panel of glazing material that allows for natural lighting through an opening in the roof assembly while preserving the weather-resistant barrier of the roof.

[BS] SKYLIGHTS AND SLOPED GLAZING. Glass or other transparent or translucent glazing material installed at a slope of 15 degrees (0.26 rad) or more from vertical. Unit skylights, tubular daylighting devices, glazing materials, solariums, sunrooms, roofs and sloped walls are included in this definition.

SLEEPING ACCOMMODATIONS. *Rooms intended and designed for sleeping.*

[A] SLEEPING UNIT. A single unit that provides rooms or spaces for one or more persons, includes permanent provisions for sleeping and can include provisions for living, eating and either sanitation or kitchen facilities but not both. Such rooms and spaces that are also part of a dwelling unit are not sleeping units.

SLIP RESISTANT. *A rough finish that is not abrasive to the bare foot.*

SLOPE. [HCD 1-AC] *The relative steepness of the land between two points and is calculated as follows:*

The horizontal distance and elevation change between the two points (e.g., an entrance and a passenger loading zone). The difference in elevation is divided by the distance and the resulting fraction is multiplied by 100 to obtain the percentage of slope.

For example: if a principal entrance is 10 feet (3048 mm) from a passenger loading zone, and the principal entrance is raised 1 foot (305 mm) higher than the passenger loading zone, then the slope is $^{1}/_{10} \times 100 = 10$ percent.

SMALL MANAGEMENT YARD. *An exterior exercise yard within a Group I-3 prison used for inmate exercise for a maximum of 2 hours per day, constructed in accordance with Section 408.15.*

[F] SMOKE ALARM. A single- or multiple-station alarm responsive to smoke. See "Multiple-station smoke alarm" and "Single-station smoke alarm."

[BF] SMOKE BARRIER. A continuous membrane, either vertical or horizontal, such as a wall, floor or ceiling assembly, that is designed and constructed to restrict the movement of smoke.

[BG] SMOKE COMPARTMENT. A space within a building separated from other interior areas of the building by smoke barriers, including interior walls and horizontal assemblies.

[BF] SMOKE DAMPER. A listed device installed in ducts and air transfer openings designed to resist the passage of smoke. The device is installed to operate automatically, controlled by a smoke detection system, and where required, is capable of being positioned from a fire command center.

[F] SMOKE DETECTOR. A listed device that senses visible or invisible particles of combustion.

[BF] SMOKE PARTITION. A wall assembly that extends from the top of the foundation or floor below to the underside of the floor or roof sheathing, deck or slab above or to the underside of the ceiling above where the ceiling membrane is constructed to limit the transfer of smoke.

[BG] SMOKE PROTECTIVE CURTAIN ASSEMBLY FOR HOISTWAY. An automatic-closing smoke and draft control curtain assembly.

[BF] SMOKE-DEVELOPED INDEX. A comparative measure, expressed as a dimensionless number, derived from measurements of smoke obscuration versus time for a material tested in accordance with ASTM E84.

[BF] SMOKEPROOF ENCLOSURE. An exit stairway or ramp designed and constructed so that the movement of the products of combustion produced by a fire occurring in any part of the building into the enclosure is limited.

[BE] SMOKE-PROTECTED ASSEMBLY SEATING. Seating served by means of egress that is not subject to smoke accumulation within or under a structure for a specified design time by means of passive design or by mechanical ventilation.

[BG] SOFT CONTAINED PLAY EQUIPMENT STRUCTURE. A play structure containing one or more components where the user enters a play environment that utilizes pliable materials.

SOFT CONTAINED PLAY STRUCTURE. [DSA-AC] *A play structure made up of one or more play components where the user enters a fully enclosed play environment that utilizes pliable materials, such as plastic, netting or fabric.*

[F] SOLID. A material that has a melting point, decomposes or sublimes at a temperature greater than 68°F (20°C).

SPACE. *A definable area, such as a room, toilet room, hall, assembly area, entrance, storage room, alcove, courtyard or lobby.*

SPC 1, SPC 2, SPC 3, SPC 4, SPC 4D and SPC 5. [OSHPD 1] *Building structural performance categories for Hospital Buildings defined in Table 2.5.3 of California Administrative Code (Part 1, Title 24 CCR), Chapter 6.*

SPC BUILDING. [OSHPD 1 and 1R] *Means a structure with an independent vertical and lateral force-resisting system (LFRS) and a distinct building structural performance category assigned by OSHPD.*

[BG] SPECIAL AMUSEMENT AREA. A temporary or permanent building or portion thereof that is occupied for amusement, entertainment or educational purposes and is arranged in a manner that meets one or more of the following descriptions:

1. Makes the means of egress path not readily apparent due to visual or audio distractions*, or*
2. Intentionally confounds identification of the means of egress path*, or*
3. Otherwise makes the means of egress path not readily available because of the nature of the attraction or mode of conveyance through the *special amusement area,* building or structure *or portion thereof.*

[BG] SPECIAL EVENT STRUCTURE. Any ground-supported structure, platform, stage, stage scaffolding or rigging, canopy, tower or similar structure supporting entertainment-related equipment or signage.

[BS] SPECIAL FLOOD HAZARD AREA. The land area subject to flood hazards and shown on a Flood Insurance Rate Map or other flood hazard map as Zone A, AE, A1-30, A99, AR, AO, AH, V, VO, VE or V1-30.

[BS] SPECIAL INSPECTION. Inspection of construction requiring the expertise of an approved special inspector in order to ensure compliance with this code and the approved construction documents.

Continuous special inspection. Special inspection by the special inspector who is present continuously when and where the work to be inspected is being performed.

Periodic special inspection. Special inspection by the special inspector who is intermittently present where the work to be inspected has been or is being performed. ***[DSA-SS, DSA-SS/CC, OSHPD 1, 1R, 2, 4 & 5]*** *and at the completion of the work.*

[BS] SPECIAL INSPECTOR. A qualified person employed or retained by an approved agency and approved by the building official as having the competence necessary to inspect a particular type of construction requiring special inspection.

[BS] SPECIFIED COMPRESSIVE STRENGTH OF MASONRY, f'_m. Minimum compressive strength, expressed as force per unit of net cross-sectional area, required of the masonry used in construction by the approved construction documents, and upon which the project design is based. Whenever the quantity f'_m is under the radical sign, the square root of numerical value only is intended and the result has units of pounds per square inch (psi) (MPa).

SPECIFIED PUBLIC TRANSPORTATION. [DSA-AC] *Transportation by bus, rail or any other conveyance (other than aircraft) provided by a private entity to the general public, with general or special service (including charter service) on a regular and continuing basis.*

[BF] SPLICE. The result of a factory and/or field method of joining or connecting two or more lengths of a fire-resistant joint system into a continuous entity.

SPORT ACTIVITY, AREA OF. See "Area of sport activity."

[F] SPRAY ROOM. A room designed to accommodate spraying operations.

[BF] SPRAY-APPLIED FOAM PLASTIC. Single- and multiple-component, spray-applied foam plastic insulation used in nonstructural applications that are installed at locations wherein the material is applied in a liquid or frothed state, permitted to free rise and cure in situ.

[BF] SPRAYED FIRE-RESISTIVE MATERIALS (SFRM). Cementitious or fibrous materials that are sprayed to provide fire-resistant protection of the substrates.

[F] SPRINKLER EXPRESS RISER. A vertical pipe used to supply water to sprinkler systems in a multiple-story building.

[BG] STAGE. A space within a building utilized for entertainment or presentations, which includes overhead hanging curtains, drops, scenery or stage effects other than lighting and sound.

[BE] STAIR. A change in elevation, consisting of one or more risers.

STAIRS. *A series of two or more steps.*

[BE] STAIRWAY. One or more flights of stairs, either exterior or interior, with the necessary landings and platforms connecting them, to form a continuous and uninterrupted passage from one level to another.

STAIRWAY, EXIT ACCESS. See "Exit access stairway."

STAIRWAY, EXTERIOR EXIT. See "Exterior exit stairway."

STAIRWAY, INTERIOR EXIT. See "Interior exit stairway."

STAIRWAY, SCISSOR. See "Scissor stairway."

[BE] STAIRWAY, SPIRAL. A stairway having a closed circular form in its plan view with uniform section-shaped treads attached to and radiating from a minimum-diameter supporting column.

[F] STANDBY POWER SYSTEM. A source of automatic electric power of a required capacity and duration to operate required building, hazardous materials or ventilation systems in the event of a failure of the primary power. Standby power systems are required for electrical loads where interruption of the primary power could create hazards or hamper rescue or firefighting operations.

[F] STANDPIPE, TYPES OF. Standpipe types are as follows:

Automatic dry. A dry standpipe system, normally filled with pressurized air, that is arranged through the use of a device, such as dry pipe valve, to admit water into the system piping automatically upon the opening of a hose valve. The water supply for an automatic dry standpipe system shall be capable of supplying the system demand.

Automatic wet. A wet standpipe system that has a water supply that is capable of supplying the system demand automatically.

Manual dry. A dry standpipe system that does not have a permanent water supply attached to the system. Manual dry standpipe systems require water from a fire department pumper to be pumped into the system through the fire department connection in order to meet the system demand.

Manual wet. A wet standpipe system connected to a water supply for the purpose of maintaining water within the system but does not have a water supply capable of delivering the system demand attached to the system. Manual-wet standpipe systems require water from a fire department pumper (or the like) to be pumped into the system in order to meet the system demand.

Semiautomatic dry. A dry standpipe system that is arranged through the use of a device, such as a deluge valve, to admit water into the system piping upon activation of a remote control device located at a hose connection. A remote control activation device shall be provided at each hose connection. The water supply for a semiautomatic dry standpipe system shall be capable of supplying the system demand.

[F] STANDPIPE SYSTEM, CLASSES OF. Standpipe classes are as follows:

Class I system. A system providing $2^1/_2$-inch (64 mm) hose connections to supply water for use by fire departments and those trained in handling heavy fire streams.

Class II system. A system providing $1^1/_2$-inch (38 mm) hose stations to supply water for use primarily by the building occupants or by the fire department during initial response.

Class III system. A system providing $1^1/_2$-inch (38 mm) hose stations to supply water for use by building occupants and $2^1/_2$-inch (64 mm) hose connections to supply a larger volume of water for use by fire departments and those trained in handling heavy fire streams.

STATE-OWNED/LEASED BUILDING. [SFM] *State-Owned/Leased Building is a building or portion of a building that is owned, leased or rented by the state. State-leased buildings shall include all required exits to a public way serving such leased area or space. Portions of state- leased buildings that are not leased or rented by the state shall not be included within the scope of this section unless such portions present an exposure hazard to the state-leased area or space.*

[BS] STEEL CONSTRUCTION, COLD-FORMED. That type of construction made up entirely or in part of steel structural members cold formed to shape from sheet or strip steel such as roof deck, floor and wall panels, studs, floor joists, roof joists and other structural elements.

[BS] STEEL ELEMENT, STRUCTURAL. Any steel structural member of a building or structure consisting of rolled shapes, pipe, hollow structural sections, plates, bars, sheets, rods or steel castings other than cold-formed steel or steel joist members.

[BS] STEEL JOIST. Any steel structural member of a building or structure made of hot-rolled or cold-formed solid or open-web sections, or riveted or welded bars, strip or sheet steel members, or slotted and expanded, or otherwise deformed rolled sections.

[BF] STEEP-SLOPE. A roof slope 2 units vertical in 12 units horizontal (17-percent slope) or greater.

STEP. *A riser and tread.*

STEPS, RECESSED STEPS, LADDERS AND RECESSED TREADS. *Those means of entry and exit to and from the pool which may be used in conjunction with each other.*

[BS] STONE MASONRY. Masonry composed of field, quarried or cast stone units bonded by mortar.

[F] STORAGE, HAZARDOUS MATERIALS. The keeping, retention or leaving of hazardous materials in closed containers, tanks, cylinders, or similar vessels; or vessels supplying operations through closed connections to the vessel.

[BS] STORAGE RACKS, STEEL. Cold-formed or hot-rolled steel structural members which are formed into steel storage racks, including pallet storage racks, movable-shelf racks, rack-supported systems, automated storage and retrieval systems (stacker racks), push-back racks, pallet-flow racks, case-flow racks, pick modules and rack-supported platforms. Other types of racks, such as drive-in or drive-through racks, cantilever racks, portable racks or racks made of materials other than steel, are not considered storage racks for the purpose of this code.

[BS] STORAGE RACKS, STEEL CANTILEVERED. A framework or assemblage composed of cold-formed or hot-rolled steel structural members, primarily in the form of vertical columns, extended bases, horizontal arms projecting from the faces of the columns, and longitudinal (down-aisle) bracing between columns. There may be shelf beams between the arms, depending on the products being stored; this definition does not include other types of racks such as pallet storage racks, drive-in racks, drive-through racks, or racks made of materials other than steel.

[BG] STORM SHELTER. A building, structure or portions thereof, constructed in accordance with ICC 500 and designated for use during hurricanes, tornadoes or other severe windstorms.

Community storm shelter. A storm shelter not defined as a "Residential storm shelter."

Residential storm shelter. A storm shelter serving occupants of dwelling units and having an occupant load not exceeding 16 persons.

[BG] STORY. That portion of a building included between the upper surface of a floor and the upper surface of the floor or roof next above (see "Basement," "Building height," "Grade plane" and "Mezzanine"). A story is measured as the vertical distance from top to top of two successive tiers of beams or finished floor surfaces and, for the topmost story, from the top of the floor finish to the top of the ceiling joists or, where there is not a ceiling, to the top of the roof rafters.

[DSA-AC] *That portion of a building or facility designed for human occupancy included between the upper surface of a floor and upper surface of the floor or roof next above. A story containing one or more mezzanines has more than one floor level. If the finished floor level directly above a basement or unused under-floor space is more than six feet (1829 mm) above grade for more than 50 percent of the total perimeter or is more than 12 feet (3658 mm) above grade at any point, the basement or unused under-floor space shall be considered as a story.*

[BG] STORY ABOVE GRADE PLANE. Any story having its finished floor surface entirely above grade plane, or in which the finished surface of the floor next above is:

1. More than 6 feet (1829 mm) above grade plane; or
2. More than 12 feet (3658 mm) above the finished ground level at any point.

[BS] STRENGTH. This term is defined two ways, the first for use in Chapter 16 and the second for use in Chapter 21.

For Chapter 16:

Nominal strength. The capacity of a structure or member to resist the effects of loads, as determined by computations using specified material strengths and dimensions and equations derived from accepted principles of structural mechanics or by field tests or laboratory tests of scaled models, allowing for modeling effects and differences between laboratory and field conditions.

Required strength. Strength of a member, cross section or connection required to resist factored loads or related internal moments and forces in such combinations as stipulated by these provisions.

Strength design. A method of proportioning structural members such that the computed forces produced in the members by factored loads do not exceed the member design strength [also called “load and resistance factor design” (LRFD)]. The term “strength design” is used in the design of concrete and masonry structural elements.

For Chapter 21:

Design strength. Nominal strength multiplied by a strength reduction factor.

Nominal strength. Strength of a member or cross section calculated in accordance with these provisions before application of any strength-reduction factors.

Required strength. Strength of a member or cross section required to resist factored loads.

[BS] STRUCTURAL COMPOSITE LUMBER. Structural member manufactured using wood elements bonded together with exterior adhesives. Examples of structural composite lumber are:

Laminated strand lumber (LSL). A composite of wood strand elements with wood fibers primarily oriented along the length of the member, where the least dimension of the wood strand elements is 0.10 inch (2.54 mm) or less and their average lengths not less than 150 times the least dimension of the wood strand elements.

Laminated veneer lumber (LVL). A composite of wood veneer sheet elements with wood fibers primarily oriented along the length of the member, where the *veneer* element thicknesses are 0.25 inch (6.4 mm) or less.

Oriented strand lumber (OSL). A composite of wood strand elements with wood fibers primarily oriented along the length of the member, where the least dimension of the wood strand elements is 0.10 inch (2.54 mm) or less and their average lengths not less than 75 times and less than 150 times the least dimension of the strand elements.

Parallel strand lumber (PSL). A composite of wood strand elements with wood fibers primarily oriented along the length of the member where the least dimension of the wood strand elements is 0.25 inch (6.4 mm) or less and their average lengths not less than 300 times the least dimension of the wood strand elements.

STRUCTURAL FRAME. [DSA-AC] *The columns and the girders, beams and trusses having direct connections to the columns and all other members that are essential to the stability of the building or facility as a whole.*

[BS] STRUCTURAL GLUED-LAMINATED TIMBER. An engineered, stress-rated product of a timber laminating plant, composed of assemblies of specially selected and prepared wood laminations in which the grain of all laminations is approximately parallel longitudinally and the laminations are bonded with adhesives.

[BS] STRUCTURAL OBSERVATION. The visual observation of the structural system by a registered design professional for general conformance to the approved construction documents.

[A] STRUCTURE. That which is built or constructed.

SUB-COMPONENT. [OSHPD 1, 1R, 2, 4 & 5] *A portion of an equipment or component that is uniquely identified by a part number (also known as model number or identification number).*

[BS] SUBSTANTIAL DAMAGE. Damage of any origin sustained by a structure whereby the cost of restoring the structure to its before-damaged condition would equal or exceed 50 percent of the market value of the structure before the damage occurred.

[BS] SUBSTANTIAL IMPROVEMENT. Any repair, reconstruction, rehabilitation, alteration, addition or other improvement of a building or structure, the cost of which equals or exceeds 50 percent of the market value of the structure before the improvement or repair is started. If the structure has sustained substantial damage, any repairs are considered substantial improvement regardless of the actual repair work performed. The term does not, however, include either:

1. Any project for improvement of a building required to correct existing health, sanitary or safety code violations identified by the building official and that are the minimum necessary to assure safe living conditions.

2. Any alteration of a historic structure provided that the alteration will not preclude the structure's continued designation as a historic structure.

[BG] SUNROOM. A one-story structure attached to a building with a glazing area in excess of 40 percent of the gross area of the structure's exterior walls and roof.

[F] SUPERVISING STATION. A facility that receives signals and at which personnel are in attendance at all times to respond to these signals.

[F] SUPERVISORY SERVICE. The service required to monitor performance of guard tours and the operative condition of fixed suppression systems or other systems for the protection of life and property.

[F] SUPERVISORY SIGNAL. A signal indicating the need of action in connection with the supervision of guard tours, the fire suppression systems or equipment or the maintenance features of related systems.

[F] SUPERVISORY SIGNAL-INITIATING DEVICE. An initiation device, such as a valve supervisory switch, water-level indicator or low-air pressure switch on a dry-pipe sprinkler system, whose change of state signals an off-normal condition and its restoration to normal of a fire protection or life safety system, or a need for action in connection with guard tours, fire suppression systems or equipment or maintenance features of related systems.

SURFACE MOUNTED COMPONENT. [OSHPD 1, 1R, 2, 4 & 5] *As referenced in CBC Section 1705A.14.3.1 Exceptions, a component directly attached to only one continuous flat surface of wall, floor or roof, without supports. Surface mounted components are directly attached to a surface by attachments (without any supports) and are not rigidly connected to anything else (e. g., distribution system, other components).*

[BG] SWIMMING POOL. Any structure intended for swimming, recreational bathing or wading that contains water over 24 inches (610 mm) deep. This includes in-ground, above-ground and on-ground pools; hot tubs; spas and fixed-in-place wading pools.

[BF] T RATING. The time period that the penetration firestop system, including the penetrating item or continuity head-of-wall system, limits the maximum temperature rise to 325°F (181°C) above its initial temperature through the penetration or void on the nonfire side.

TACTILE. *An object that can be perceived using the sense of touch.*

TACTILE SIGN. *A sign containing raised characters and/or symbols and accompanying Braille.*

[BG] TECHNICAL PRODUCTION AREA. Open elevated areas or spaces intended for entertainment technicians to walk on and occupy for servicing and operating entertainment technology systems and equipment. Galleries, including fly and lighting galleries, gridirons, catwalks, and similar areas are designed for these purposes.

TECHNICALLY INFEASIBLE. [DSA-AC] *An alteration of a building or a facility, that has little likelihood of being accomplished because the existing structural conditions require the removal or alteration of a load-bearing member that is an essential part of the structural frame, or because other existing physical or site constraints prohibit modification or addition of elements, spaces or features that are in full and strict compliance with the minimum requirements for new construction and which are necessary to provide accessibility.*

TEEING GROUND. [DSA-AC] *In golf, the starting place for the hole to be played.*

TEMPORARY. [DSA-AC] *Buildings and facilities intended for use at one location for not more than one year and seats intended for use at one location for not more than 90 days.*

TEMPORARY HOLDING CELL, ROOM or AREA. [BSCC and SFM] *Temporary Holding cell, room or area shall mean a room for temporary holding of inmates, detainees or in-custody individuals for less than 24 hours.*

TEMPORARY HOLDING FACILITY. [SFM] *A building or portion of a building, operated by law enforcement personnel, with one or more temporary holding cells or rooms.*

TENABLE ENVIRONMENT. [SFM] *Tenable environment shall mean an environment in which the products of combustion, toxic gases, smoke and heat are limited or otherwise restricted to maintain the impact on occupants to a level that is not life threatening.*

[BS] TEMPORARY EVENT. A single use during the service life of a public-occupancy temporary structure at a given location that includes its installation, inspection, use and occupancy, and dismantling.

[BS] TEMPORARY STRUCTURE. Any building or structure erected for a period of 180 days or less to support temporary events. Temporary structures include a range of structure types (public-occupancy temporary structures, temporary special event structures, tents, umbrellas and other membrane structures, relocatable buildings, temporary bleachers, etc.) for a range of purposes (storage, equipment protection, dining, workspace, assembly, etc.).

[BG] TENSILE MEMBRANE STRUCTURE. A membrane structure having a shape that is determined by tension in the membrane and the geometry of the support structure. Typically, the structure consists of both flexible elements (e.g., membrane and cables), nonflexible elements (e.g., struts, masts, beams and arches) and the anchorage (e.g., supports and foundations). This includes frame-supported tensile membrane structures.

[F] TENT. A structure, enclosure, umbrella structure or shelter, with or without sidewalls or drops, constructed of fabric or pliable material supported in any manner except by air or the contents it protects (see "Umbrella structure").

TERMINALLY ILL. *As termed for an individual, means the individual has a life expectancy of six months or less as stated in writing by his or her attending physician and surgeon.*

[BF] TERMINATED STOPS. Factory feature of a door frame where the stops of the door frame are terminated not more than 6 inches (152 mm) from the bottom of the door frame. Terminated *stops* are also known as "hospital stops" or "sanitary stops."

TESTING AGENCY. [HCD 1 & HCD 2] *An agency approved by the department as qualified and equipped for testing of products, materials, equipment and installations in accordance with nationally recognized standards. For additional information, see Health and Safety Code Section 17920(n).*

TEXT TELEPHONE. *Machinery or equipment that employs interactive text-based communications through the transmission of coded signals across the standard telephone network. Text telephones can include, for example, devices known as TTYs (teletypewriters) or computers.*

[BG] THERMAL ISOLATION. A separation of conditioned spaces, between a sunroom and a dwelling unit, consisting of existing or new walls, doors or windows.

[BF] THERMOPLASTIC MATERIAL. A plastic material that is capable of being repeatedly softened by increase of temperature and hardened by decrease of temperature.

[BF] THERMOSETTING MATERIAL. A plastic material that is capable of being changed into a substantially nonreformable product when cured.

[BF] THROUGH PENETRATION. A breach in both sides of a floor, floor-ceiling or wall assembly to accommodate an item passing through the breaches.

[BF] THROUGH-PENETRATION FIRESTOP SYSTEM. An assemblage consisting of a fire-resistance-rated floor, floor-ceiling, or wall assembly, one or more penetrating items passing through the breaches in both sides of the assembly and the materials or devices, or both, installed to resist the spread of fire through the assembly for a prescribed period of time.

[BS] TIE, WALL. Metal connector that connects wythes of masonry walls together.

[BS] TIE-DOWN (HOLD-DOWN). A device used to resist uplift of the chords of shear walls.

[BS] TILE, STRUCTURAL CLAY. A hollow masonry unit composed of burned clay, shale, fire clay or mixture thereof, and having parallel cells.

[F] TIRES, BULK STORAGE OF. Storage of tires where the area available for storage exceeds 20,000 cubic feet (566 m^3).

TODDLER. *Any child between 18 months and 36 months of age.*

TORQUE-CONTROLLED POST-INSTALLED ANCHOR. [DSA-SS, DSA-SS/CC & OSHPD 1, 1R, 2, 4 & 5] *A post-installed anchor that is set by the expansion of one or more sleeves or other elements against the sides of the drilled hole through the application of torque, which pulls the cone(s) into the expansion sleeve(s); after setting, tensile loading can cause additional expansion (follow-up expansion).*

[A] TOWNHOUSE. A building that contains three or more attached townhouse units.

[A] TOWNHOUSE UNIT. A single-family dwelling unit in a townhouse that extends from the foundation to the roof and has a yard or public way on not fewer than two sides.

[F] TOXIC. A chemical falling within any of the following categories:

1. A chemical that has a median lethal dose (LD_{50}) of more than 50 milligrams per kilogram, but not more than 500 milligrams per kilogram of body weight when administered orally to albino rats weighing between 200 and 300 grams each.
2. A chemical that has a median lethal dose (LD_{50}) of more than 200 milligrams per kilogram, but not more than 1,000 milligrams per kilogram of body weight when administered by continuous contact for 24 hours (or less if death occurs within 24 hours) with the bare skin of albino rabbits weighing between 2 and 3 kilograms each.
3. A chemical that has a median lethal concentration (LC_{50}) in air of more than 200 parts per million, but not more than 2,000 parts per million by volume of gas or vapor, or more than 2 milligrams per liter but not more than 20 milligrams per liter of mist, fume or dust, when administered by continuous inhalation for 1 hour (or less if death occurs within 1 hour) to albino rats weighing between 200 and 300 grams each.

TRANSFER DEVICE. [DSA-AC] *Equipment designed to facilitate the transfer of a person from a wheelchair or other mobility aid to and from an amusement ride seat.*

[BG] TRANSIENT. Occupancy of a dwelling unit or sleeping unit for not more than 30 days.

[BG] TRANSIENT AIRCRAFT. Aircraft based at another location and that is at the transient location for not more than 90 days.

TRANSIENT LODGING. *A building or facility containing one or more guest room(s) for sleeping that provides accommodations that are primarily short-term in nature (generally 30 days or less). Transient lodging does not include residential dwelling units intended to be used as a residence, inpatient medical care facilities, licensed long-term care facilities, detention or correctional facilities, or private buildings or facilities that contain no more than five rooms for rent or hire and that are actually occupied by the proprietor as the residence of such proprietor.*

[DSA-AC] *See also the definition of Place of Public Accommodation.*

TRANSIT BOARDING PLATFORM. [DSA-AC] *A horizontal, generally level surface, whether raised above, recessed below or level with a transit rail, from which persons embark/disembark a fixed rail vehicle.*

TRANSITION PLATE. [DSA-AC] *A sloping pedestrian walking surface located at the end(s) of a gangway.*

TREATED WOOD. See "Fire-retardant-treated wood" and "Preservative-treated wood."

TREAD. *The horizontal part of a step.*

TREATMENT OF WATER. *The process of conditioning and disinfection of pool water by means of a combination of filtration and the addition of chemicals to the water.*

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[BF] TRIM. Picture molds, chair rails, baseboards, handrails, door and window frames and similar decorative or protective materials used in fixed applications.

[F] TROUBLE SIGNAL. A signal initiated by the fire alarm system or device indicative of a fault in a monitored circuit or component.

TTY. *An abbreviation for teletypewriter. Machinery that employs interactive text-based communication through the transmission of coded signals across the telephone network. TTYs may include, for example, devices known as TDDs (telecommunication display devices or telecommunication devices for deaf persons) or computers with special modems. TTYs are also called text telephones.*

[BS] TSUNAMI DESIGN GEODATABASE. The ASCE database (version 2016-1.0) of *Tsunami Design Zone* maps and associated design data for the states of Alaska, California, Hawaii, Oregon and Washington.

[BS] TSUNAMI DESIGN ZONE. An area identified on the *Tsunami Design Zone* map between the shoreline and the inundation limit, within which certain structures designated in Chapter 16 are designed for or protected from inundation.

[BS] TUBULAR DAYLIGHTING DEVICE (TDD). A non-operable fenestration unit primarily designed to transmit daylight from a roof surface to an interior ceiling via a tubular conduit. The basic unit consists of an exterior glazed weathering surface, a light-transmitting tube with a reflective interior surface, and an interior-sealing device such as a translucent ceiling panel. The unit can be factory assembled, or field-assembled from a manufactured kit.

TURNOVER TIME. *The period of time, in hours, required to circulate a volume of water equal to the pool capacity.*

[BS] TYPE X. A type of gypsum panel product with special core additives to increase the fire resistance as specified by the applicable standards listed in Table 2506.2 (see the definition of "Gypsum panel product").

[F] UMBRELLA STRUCTURE. A structure, enclosure or shelter with or without sidewalls or drops, constructed of fabric or pliable material supported by a central pole or poles (see "Tent").

[BS] UNDERLAYMENT. One or more layers of a material that is applied to a steep-slope roof covering deck under the roof covering and resists liquid water that penetrates the roof covering.

UNIFORMITY COEFFICIENT. *The ratio of theoretical size of a sieve that will pass 60 percent of the sand to the theoretical size of sieve that will pass 10 percent.*

[BS] UNDERPINNING. The alteration of an existing foundation to transfer loads to a lower elevation using new piers, piles or other permanent structural support elements installed below the existing foundation.

UNIT SKYLIGHT. See "Skylight, unit."

UNREASONABLE HARDSHIP. *When the enforcing agency finds that compliance with the building standard would make the specific work of the project affected by the building standard infeasible, based on an overall evaluation of the following factors:*

1. *The cost of providing access.*
2. *The cost of all construction contemplated.*
3. *The impact of proposed improvements on financial feasibility of the project.*
4. *The nature of the accessibility which would be gained or lost.*
5. *The nature of the use of the facility under construction and its availability to persons with disabilities.*

The details of any finding of unreasonable hardship shall be recorded and entered in the files of the enforcing agency.

[F] UNSTABLE (REACTIVE) MATERIAL. A material, other than an explosive, which in the pure state or as commercially produced, will vigorously polymerize, decompose, condense or become self-reactive and undergo other violent chemical changes, including explosion, when exposed to heat, friction or shock, or in the absence of an inhibitor, or in the presence of contaminants, or in contact with incompatible materials. Unstable (reactive) materials are subdivided as follows:

Class 1. Materials that in themselves are normally stable but which can become unstable at elevated temperatures and pressure.

Class 2. Materials that in themselves are normally unstable and readily undergo violent chemical change but do not detonate. This class includes materials that can undergo chemical change with rapid release of energy at normal temperatures and pressures, and that can undergo violent chemical change at elevated temperatures and pressures.

Class 3. Materials that in themselves are capable of detonation or of explosive decomposition or explosive reaction but which require a strong initiating source or which must be heated under confinement before initiation. This class includes materials that are sensitive to thermal or mechanical shock at elevated temperatures and pressures.

Class 4. Materials that in themselves are readily capable of detonation or explosive decomposition or explosive reaction at normal temperatures and pressures. This class includes materials that are sensitive to mechanical or localized thermal shock at normal temperatures and pressures.

[F] USE (MATERIAL). Placing a material into action, including solids, liquids and gases.

USE ZONE. [DSA-AC] *The ground level area beneath and immediately adjacent to a play structure or play equipment that is designated by ASTM F1487 for unrestricted circulation around the play equipment and where it is predicted that a user would land when falling from or exiting the play equipment.*

VALUATION THRESHOLD. [DSA-AC] *An annually adjusted, dollar-amount figure used in part to determine the extent of required path of travel upgrades. The baseline valuation threshold of $50,000 is based on the January 1981, "ENR US20 Cities" Average Construction Cost Index (CCI) of 3372.02 as published in Engineering News Record, McGraw Hill Publishing Company. The current valuation threshold is determined by multiplying the baseline valuation threshold by a ratio of the current year's January CCI to the baseline January 1981 CCI.*

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[BG] VAPOR DIFFUSION PORT. An assembly constructed or installed within a roof assembly at an opening in the roof deck to convey water vapor from an unvented attic to the outside atmosphere.

[BF] VAPOR PERMEABLE. The property of having a moisture vapor permeance rating of 5 perms (2.9×10^{-10} kg/Pa × s × m^2) or greater, when tested in accordance with Procedure A or Procedure B of ASTM E96. A vapor permeable material permits the passage of moisture vapor.

[BF] VAPOR RETARDER CLASS. A measure of a material or assembly's ability to limit the amount of moisture that passes through that material or assembly. Vapor retarder class shall be defined using the desiccant method with Procedure A of ASTM E96 as follows:

Class I: 0.1 perm or less.

Class II: 0.1 < perm ≤ 1.0 perm.

Class III: 1.0 < perm ≤ 10 perm.

VARIABLE MESSAGE SIGNS (VMS). [DSA-AC] *Electronic signs that have a message with the capacity to change by means of scrolling, streaming or paging across a background.*

VARIABLE MESSAGE SIGN (VMS) CHARACTERS. [DSA-AC] *Characters of an electronic sign are composed of pixels in an array. High resolution VMS characters have vertical pixel counts of 16 rows or greater. Low resolution VMS characters have vertical pixel counts of 7 to 15 rows.*

[BS] VEGETATIVE ROOF. A roof assembly of interacting components designed to waterproof a building's top surface that includes, by design, a vegetative surface.

[BS] VEHICLE BARRIER. A component or a system of components, near open sides or walls of garage floors or ramps that act as a restraint for vehicles.

[BG] VEHICULAR GATE. A gate that is intended for use at a vehicular entrance or exit to a facility, building or portion thereof, and that is not intended for use by pedestrian traffic.

VEHICULAR OR PEDESTRIAN ARRIVAL POINTS. [HCD 1-AC] *Public or resident parking areas, public transportation stops, passenger loading zones, and public streets or sidewalks.*

VEHICULAR WAY. [HCD 1-AC, DSA-AC] *A route provided for vehicular traffic, such as in a street, driveway or parking facility.*

[BF] VENEER. A facing attached to a wall for the purpose of providing ornamentation, protection or insulation, but not counted as adding strength to the wall.

[M] VENTILATION. The natural or mechanical process of supplying conditioned or unconditioned air to, or removing such air from, any space.

[F] VERTICAL WATER SUPPLY ZONE. A vertical fire protection zone within the standpipe system or group of floors supplied by a single sprinkler express riser in a high-rise building established by pressure limitations based on the design.

[BF] VINYL SIDING. A shaped material, made principally from rigid polyvinyl chloride (PVC), that is used as an exterior wall covering.

[F] VISIBLE ALARM NOTIFICATION APPLIANCE. A notification appliance that alerts by the sense of sight.

WAITING ROOM. [SFM] *Waiting room is a room or area normally provided with seating and used for persons waiting.*

WALK. [DSA-AC] *An exterior prepared surface for pedestrian use, including pedestrian areas such as plazas and courts. (As differentiated from the definition of "Sidewalk.")* ***[HCD 1-AC]*** *A surfaced pedestrian way not located contiguous to a street used by the public. (See also "Sidewalk.")*

[BG] WALKWAY, PEDESTRIAN. A walkway used exclusively as a pedestrian trafficway.

[BS] WALL. This definition applies only to Chapter 21.

A vertical element with a horizontal length-to-thickness ratio greater than three, used to enclose space.

Cavity wall. A wall built of masonry units or of concrete, or a combination of these materials, arranged to provide an airspace within the wall, and in which the inner and outer parts of the wall are tied together with metal ties.

Dry-stacked, surface-bonded wall. A wall built of concrete masonry units where the units are stacked dry, without mortar on the bed or head joints, and where both sides of the wall are coated with a surface-bonding mortar.

Parapet wall. The part of any wall entirely above the roof line.

[BS] WALL, LOAD-BEARING. Any wall meeting either of the following classifications:

1. Any metal or wood stud wall that supports more than 100 pounds per linear foot (1459 N/m) of vertical load in addition to its own weight.
2. Any masonry, concrete or mass timber wall that supports more than 200 pounds per linear foot (2919 N/m) of vertical load in addition to its own weight.

[BS] WALL, NONLOAD-BEARING. Any wall that is not a load-bearing wall.

WATERLINE. *Shall be defined as one of the following:*

1. *Skimmer systems. The waterline shall be the midpoint of the operating range of the skimmers.*
2. *Overflow system. The waterline shall be the top edge of the overflow rim.*

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[F] WATER-REACTIVE MATERIAL. A material that explodes; violently reacts; produces flammable, toxic or other hazardous gases; or evolves enough heat to cause autoignition or ignition of combustibles upon exposure to water or moisture. Water-reactive materials are subdivided as follows:

Class 3. Materials that react explosively with water without requiring heat or confinement.

Class 2. Materials that react violently with water or have the ability to boil water. Materials that produce flammable, toxic or other hazardous gases or evolve enough heat to cause autoignition or ignition of combustibles upon exposure to water or moisture.

Class 1. Materials that react with water with some release of energy, but not violently.

[BF] WATER-RESISTIVE BARRIER. A material behind an exterior wall covering that is intended to resist liquid water that has penetrated behind the exterior covering from further intruding into the exterior wall assembly.

[BF] WEATHER-EXPOSED SURFACES. Surfaces of walls, ceilings, floors, roofs, soffits and similar surfaces exposed to the weather except the following:

1. Ceilings and roof soffits enclosed by walls, fascia, bulkheads or beams that extend not less than 12 inches (305 mm) below such ceiling or roof soffits.
2. Walls or portions of walls beneath an unenclosed roof area, where located a horizontal distance from an open exterior opening equal to not less than twice the height of the opening.
3. Ceiling and roof soffits located a minimum horizontal distance of 10 feet (3048 mm) from the outer edges of the ceiling or roof soffits.

WET BAR. [DSA-AC] *An area or space with a counter equipped with a sink and running water but without cooking facilities.*

[F] WET-CHEMICAL EXTINGUISHING SYSTEM. A solution of water and potassium-carbonate-based chemical, potassium-acetate-based chemical or a combination thereof, forming an extinguishing agent.

WHEELCHAIR. [HCD 1-AC, DSA-AC] *A chair mounted on wheels to be propelled by its occupant manually or with the aid of electric power, of a size and configuration conforming to the recognized standard models of the trade.*

[BE] WHEELCHAIR SPACE. A space for a single wheelchair and its occupant.

[BS] WIND DESIGN GEODATABASE. The ASCE database (version 2022-1.0) of geocoded wind speed design data. The ASCE Wind Design Geodatabase of geocoded wind speed design data is available at https://asce7hazardtool.online/.

[BS] WIND SPEED, BASIC, *V*. See "Basic wind speed."

[BS] WIND SPEED, V_{asd}. Allowable stress design wind speeds.

[BS] WINDBORNE DEBRIS REGION. Areas within hurricane-prone regions located:

1. Within 1 mile (1.61 km) of the mean high-water line where an Exposure D condition exists upwind at the waterline and the basic wind speed, *V*, is 130 mph (58 m/s) or greater; or
2. In areas where the basic wind speed, *V*, is 140 mph (63 m/s) or greater.

For Risk Category II buildings and structures and Risk Category III buildings and structures, except health care facilities, the windborne debris region shall be based on Figure 1609.3.(2). For Risk Category III health care facilities and Risk Category IV buildings and structures, the windborne debris region shall be based on Figure 1609.3(3) and Figure 1609.3(4), respectively.

[BE] WINDER. A tread with nonparallel edges.

WINERY CAVES. *See Section 446.*

WINDFORCE-RESISTING SYSTEM, MAIN. See "Main windforce-resisting system."

[BS] WIRE BACKING. Horizontal strands of tautened wire attached to surfaces of vertical supports which, when covered with the building paper, provide a backing for cement plaster.

[F] WIRELESS PROTECTION SYSTEM. A system or a part of a system that can transmit and receive signals without the aid of wire.

[BS] WOOD SHEAR PANEL. A wood floor, roof or wall component sheathed to act as a shear wall or diaphragm.

[BS] WOOD STRUCTURAL PANEL. A panel manufactured from veneers, wood strands or wafers or a combination of veneer and wood strands or wafers bonded together with waterproof synthetic resins or other suitable bonding systems. Examples of wood structural panels are:

Composite panels. A wood structural panel that is comprised of wood veneer and reconstituted wood-based material and bonded together with waterproof adhesive.

Oriented strand board (OSB). A mat-formed wood structural panel comprised of thin rectangular wood strands arranged in cross-aligned layers with surface layers normally arranged in the long panel direction and bonded with waterproof adhesive.

Plywood. A wood structural panel comprised of plies of wood veneer arranged in cross-aligned layers. The plies are bonded with waterproof adhesive that cures on application of heat and pressure.

[BS] WOOD/PLASTIC COMPOSITE. A composite material made primarily from wood or cellulose-based materials and plastic.

WORK AREA EQUIPMENT. [DSA-AC] *Any machine, instrument, engine, motor, pump, conveyor or other apparatus used to perform work. As used in this document, this term shall apply only to equipment that is permanently installed or built-in in employee work areas. Work area equipment does not include passenger elevators and other accessible means of vertical transportation.*

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[F] WORKSTATION. A defined space or an independent principal piece of equipment using HPM within a fabrication area where a specific function, laboratory procedure or research activity occurs. Approved or listed hazardous materials storage cabinets, flammable liquid storage cabinets or gas cabinets serving a workstation are included as part of the workstation. A workstation is allowed to contain ventilation equipment, fire protection devices, detection devices, electrical devices and other processing and scientific equipment.

[DSA-AC] *An area defined by equipment and/or work surfaces intended for use by employees only, and generally for one or a small number of employees at a time. Examples include ticket booths; the employee side of grocery store check stands; the bartender area behind a bar; the employee side of snack bars, sales counters and public counters; guardhouses; toll booths; kiosk vending stands; lifeguard stations; maintenance equipment closets; counter and equipment areas in restaurant kitchens; file rooms; storage areas; etc.*

[BS] WYTHE. Each continuous, vertical section of a wall, one masonry unit in thickness.

[BG] YARD. An open space, other than a court, unobstructed from the ground to the sky, except where specifically provided by this code, on the lot on which a building is situated.

[F] ZONE. A defined area within the protected premises. A zone can define an area from which a signal can be received, an area to which a signal can be sent or an area in which a form of control can be executed.

[F] ZONE, NOTIFICATION. An area within a building or facility covered by notification appliances which are activated simultaneously.

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CALIFORNIA BUILDING CODE – MATRIX ADOPTION TABLE
CHAPTER 3 – OCCUPANCY CLASSIFICATION AND USE

(Matrix Adoption Tables are nonregulatory, intended only as an aid to the code user.
See Chapter 1 for state agency authority and building applications.)

Adopting agency	BSC	BSC-CG	SFM	HCD			DSA			OSHPD							BSCC	DPH	AGR	DWR	CEC	CA	SL	SLC
				1	2	1/AC	AC	SS	SS/CC	1	1R	2	3	4	5	6								
Adopt entire chapter	X							X	X	X	X	X	X	X	X	X								
Adopt entire chapter as amended (amended sections listed below)			X	X	X																			
Adopt only those sections that are listed below																						X		
Chapter / Section																								
302.1			X	X	X																			
302.1.3																						X		
303.1			X																					
303.2			X																					
303.7			X																					
303.8			X																					
304.1			X																					
305.1			X																					
305.2			X																					
305.2.1			X																					
306.2			X																					
Table 307.1(1)			X																					
Table 307.1(2)			X																					
307.1.1			X																					
307.4			X																					
308.1			X																					
308.3			X	†	†																			
308.4			X																					
308.4.6			X																					
308.4.7			X																					
308.4.8			X																					
308.4.9			X																					
308.5			X																					
308.5.2			X																					
308.5.3			X																					
308.5.4			X																					
310.2			X	X																				
310.3			X	X																				
310.3.1			X																					
310.3.2			X																					
310.4			X	X																				
310.4.1			X																					
310.4.2			X	X	X																			
310.5			X																					
310.6			X																					
313			X																					
314			X																					

The state agency does not adopt sections identified with the following symbol: †

The Office of the State Fire Marshal's adoption of this chapter or individual sections is applicable to structures regulated by other state agencies pursuant to Section 1.11.

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CHAPTER

3

OCCUPANCY CLASSIFICATION AND USE

User notes:	
About this chapter:	Chapter 3 provides the criteria by which buildings and structures are classified into use groups and occupancies. Through the balance of the code, occupancy classification is fundamental in the setting of features of construction; occupant safety requirements, especially building limitations; means of egress; fire protection systems; and interior finishes.
ICC code development note:	Code change proposals to sections preceded by the designation [F] will be considered by the IFC code development committee meeting during the 2024 (Group A) Code Development Cycle. All other code change proposals will be considered by a code development committee meeting during the 2025 (Group B) Code Development Cycle.

SECTION 301—SCOPE

301.1 General. The provisions of this chapter shall control the classification of all buildings and structures as to occupancy and use. Different classifications of occupancy and use represent varying levels of hazard and risk to building occupants and adjacent properties.

SECTION 302—OCCUPANCY CLASSIFICATION AND USE DESIGNATION

302.1 Occupancy classification. Occupancy classification is the formal designation of the primary purpose of the building, structure or portion thereof. Structures shall be classified into one or more of the occupancy groups specified in this section based on the nature of the hazards and risks to building occupants generally associated with the intended purpose of the building or structure. An area, room or space that is intended to be occupied at different times for different purposes shall comply with all applicable requirements associated with such potential multipurpose. Structures containing multiple occupancy groups shall comply with Section 508. Where a structure is proposed for a purpose that is not specified in this section, such structure shall be classified in the occupancy it most nearly resembles based on the fire safety and relative hazard. Occupiable roofs shall be classified in the group that the occupancy most nearly resembles, according to the fire safety and relative hazard, and shall comply with Section 503.1.4.

1. Assembly (see Section 303): Groups A-1, A-2, A-3, A-4 and A-5.
2. Business (see Section 304): Group B.
3. ***[SFM]*** *Organized Camps (see Section 450): Group C.*
4. Educational (see Section 305): Group E.
5. Factory and Industrial (see Section 306): Groups F-1 and F-2.
6. High Hazard (see Section 307): Groups H-1, H-2, H-3, H-4 and H-5.
7. Institutional (see Section 308): Groups I-2, I-3 and I-4.
8. ***[SFM]*** *Laboratory (see Section 202): Group B, unless classified as Group L (see Section 453) or Group H (see Section 307).*
9. ***[SFM]*** *Laboratory Suites (see Section 453): Group L.*
10. Mercantile (see Section 309): Group M.
11. Residential (see Section 310): Groups R-1, R-2, *R-2.1,* R-3, *R-3.1* and R-4.
12. Storage (see Section 311): Groups S-1 and S-2.
13. Utility and Miscellaneous (see Section 312): Group U.
14. ***[SFM]*** *Existing buildings housing existing protective social care homes or facilities established prior to 1972 (see California Fire Code Chapter 11 and California Existing Building Code).*

302.1.1 Reserved

302.1.2 Reserved

302.1.3 Pharmacies; veterinary facilities; barbering, cosmetology or electrolysis establishments; and acupuncture offices. *See Chapter 12.*

302.2 Use designation. Occupancy groups contain subordinate uses having similar hazards and risks to building occupants. Uses include, but are not limited to, those functional designations specified within the occupancy group descriptions in Section 302.1. Certain uses require specific limitations and controls in accordance with the provisions of Chapter 4 and elsewhere in this code.

SECTION 303—ASSEMBLY GROUP A

303.1 Assembly Group A. Assembly Group A occupancy includes, among others, the use of a building or structure, or a portion thereof, for the gathering of persons for purposes such as civic, social or religious functions; recreation, food or drink consumption or awaiting transportation; *motion picture and television production studio sound stages, approved production facilities and production locations; or for the showing of motion pictures when an admission fee is charged and when such building or structure is open to the public and has a capacity of 10 or more persons.*

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303.1.1 Small buildings and tenant spaces. A building or tenant space used for assembly purposes with an occupant load of less than 50 persons shall be classified as a Group B occupancy.

303.1.2 Small assembly spaces. The following rooms and spaces shall not be classified as Assembly occupancies:

1. A room or space used for assembly purposes with an occupant load of less than 50 persons and accessory to another occupancy shall be classified as a Group B occupancy or as part of that occupancy.
2. A room or space used for assembly purposes that is less than 750 square feet (70 m^2) in area and accessory to another occupancy shall be classified as a Group B occupancy or as part of that occupancy.

303.1.3 Associated with Group E occupancies. A room or space used for assembly purposes that is associated with a Group E occupancy is not considered a separate occupancy.

303.1.4 Accessory to places of religious worship. Accessory religious educational rooms and religious auditoriums with occupant loads of less than 100 per room or space are not considered separate occupancies.

303.1.5 Special amusement areas. Special amusement areas shall comply with Section 411.

303.2 Assembly Group A-1. Group A-1 occupancy includes assembly uses, usually with fixed seating, intended for the production and viewing of the performing arts or motion pictures, including but not limited to:

Motion picture and television production studio sound stages, approved production facilities and production locations. (with live audiences).

Motion picture theaters

Symphony and concert halls

Television and radio studios admitting an audience

Theaters

303.3 Assembly Group A-2. Group A-2 occupancy includes assembly uses intended for food and/or drink consumption, including but not limited to:

Banquet halls

Casinos (gaming areas)

Nightclubs

Restaurants, cafeterias and similar dining facilities (including associated commercial kitchens)

Taverns and bars

303.4 Assembly Group A-3. Group A-3 occupancy includes assembly uses intended for worship, recreation or amusement and other assembly uses not classified elsewhere in Group A, including but not limited to:

Amusement arcades

Art galleries

Bowling alleys

Community halls

Courtrooms

Dance halls (not including food or drink consumption)

Exhibition halls

Funeral parlors

Greenhouses for the conservation and exhibition of plants that provide public access

Gymnasiums (without spectator seating)

Indoor swimming pools (without spectator seating)

Indoor tennis courts (without spectator seating)

Lecture halls

Libraries

Museums

Places of religious worship

Pool and billiard parlors

Waiting areas in transportation terminals

303.5 Assembly Group A-4. Group A-4 occupancy includes assembly uses intended for viewing of indoor sporting events and activities with spectator seating, including but not limited to:

Arenas

Skating rinks

Swimming pools

Tennis courts

303.6 Assembly Group A-5. Group A-5 occupancy includes assembly uses intended for participation in or viewing outdoor activities, including but not limited to:

Amusement park structures

Bleachers

Grandstands

Stadiums

303.7 Fixed guideway transit systems. [SFM] *Fixed guideway transit system buildings shall conform to the requirements of this code for their occupancy classification in addition to the provisions set forth in Section 443.*

303.8 Subterranean spaces for winery facilities in natural or manmade caves. [SFM] *For fire and life safety requirements, see Section 446.*

SECTION 304—BUSINESS GROUP B

304.1 Business Group B. Business Group B occupancy includes, among others, the use of a building or structure, or a portion thereof, for office, professional or service-type transactions, including storage of records and accounts. Business occupancies shall include, but not be limited to, the following:

Airport traffic control towers

Ambulatory care facilities

Animal hospitals, kennels and pounds

Banks

Barber and beauty shops

Car wash

Civic administration

Clinic, outpatient

Dry cleaning and laundries: pick-up and delivery stations and self-service

Educational occupancies for students above the 12th grade including higher education laboratories

Electronic data entry

Food processing establishments and commercial kitchens not associated with restaurants, cafeterias and similar dining facilities not more than 2,500 square feet (232 m^2) in area

Laboratories: testing and research *and* ***[SFM]*** *instruction*

Lithium-ion or lithium metal battery testing, research and development

Motor vehicle showrooms

Post offices

Print shops

Professional services (architects, attorneys, dentists, physicians, engineers, etc.)

Radio and television stations

Telephone exchanges

Training and skill development not in a school or academic program (this shall include, but not be limited to, tutoring centers, martial arts studios, gymnastics and similar uses regardless of the ages served, and where not classified as a Group A occupancy)

304.2 Airport traffic control towers. Airport traffic control towers shall comply with Section 412.2.

304.3 Ambulatory care facilities. Ambulatory care facilities shall comply with Section 422.

SECTION 305—EDUCATIONAL GROUP E

305.1 Educational Group E. Educational Group E occupancy includes, among others, the use of a building or structure, or a portion thereof, more *than six* persons at any one time for educational purposes through the 12th grade.

Exception: [SFM] *A residence used as a home school for the children who normally reside at the residence. Such residences shall remain classified as Group R-2, or Group R-3 occupancies.*

305.1.1 Accessory to places of religious worship. Religious educational rooms and religious auditoriums, which are accessory to places of religious worship in accordance with Section 303.1.4 and have occupant loads of less than 100 per room or space, shall be classified as Group A-3 occupancies.

305.2 Group E, *child*-care facilities. This group includes buildings and structures or portions thereof occupied by more than *six* children *36 months* of age *and older* who receive educational, supervision or personal care services for fewer than 24 hours per day.

Exception: [SFM] *A child-care facility not otherwise classified a Group R-3 occupancy, where occupants are not capable of responding to an emergency situation without physical assistance from the staff shall be classified as Group I-4. Infants and toddlers are allowed in a Group E child care when the facility complies with California Building Code Section 305.2.1, 305.2.2, 305.2.3 or 308.5.1.*

305.2.1 Within places of religious worship. Rooms and spaces within places of religious worship providing such *child care* during religious functions shall be classified as part of the primary occupancy *where not licensed for child-care purposes by the Department of Social Services.*

305.2.2 Five or fewer children. A facility having five or fewer children receiving such day care shall be classified as part of the primary occupancy.

305.2.3 Five or fewer children in a dwelling unit. A facility such as the above within a dwelling unit and having five or fewer children receiving such day care shall be classified as a Group R-3 occupancy or shall comply with the *California Residential Code*.

305.3 Storm shelters in Group E occupancies. Storm shelters shall be provided for Group E occupancies where required by Section 423.5.

SECTION 306—FACTORY GROUP F

306.1 Factory Industrial Group F. Factory Industrial Group F occupancy includes, among others, the use of a building or structure, or a portion thereof, for assembling, disassembling, fabricating, finishing, manufacturing, packaging, repair or processing operations that are not classified as a Group H hazardous or Group S storage occupancy.

306.2 Moderate-hazard factory industrial, Group F-1. Factory industrial uses that are not classified as Factory Industrial F-2 Low Hazard shall be classified as F-1 Moderate Hazard and shall include, but not be limited to, the following:

Aircraft (manufacturing, not to include repair)

Appliances

Athletic equipment

Automobiles and other motor vehicles

Bakeries

Beverages: over 20-percent alcohol content

Bicycles

Boats

Brooms or brushes

Business machines

Cameras and photo equipment

Canvas or similar fabric

Carpets and rugs (includes cleaning)

Clothing

Construction and agricultural machinery

Disinfectants

Dry cleaning and dyeing

Electric generation plants

Electronics

Energy storage systems (ESS) in dedicated use buildings

Energy storage systems (ESS) and equipment containing lithium-ion or lithium metal batteries

Engines (including rebuilding)

Food processing establishments and commercial kitchens not associated with restaurants, cafeterias and similar dining facilities more than 2,500 square feet (232 m^2) in area

Furniture

Hemp products

Jute products

Laundries

Leather products

Lithium-ion batteries

Machinery

Metals

Millwork (sash and door)

[SFM] *Motion picture and television production studio Sound Stages, Approved Production Facilities and production locations (without live audiences)*

Motion pictures and television filming (without spectators)

Musical instruments
Optical goods
Paper mills or products
Photographic film
Plastic products
Printing or publishing
Recreational vehicles
Refuse incineration
Shoes
Soaps and detergents
Textiles
Tobacco
Trailers
Upholstering
Vehicles powered by lithium-ion or lithium metal batteries
Water/sewer treatment facilities
Wood; distillation
Woodworking (cabinet)

306.2.1 Aircraft manufacturing facilities. Aircraft manufacturing facilities shall comply with Section 412.6.

306.3 Low-hazard factory industrial, Group F-2. Factory industrial uses that involve the fabrication or manufacturing of noncombustible materials that during finishing, packing or processing do not involve a significant fire hazard shall be classified as Group F-2 occupancies and shall include, but not be limited to, the following:

Beverages: up to and including 20-percent alcohol content
Brick and masonry
Ceramic products
Foundries
Glass products
Gypsum
Ice
Metal products (fabrication and assembly)

SECTION 307—HIGH-HAZARD GROUP H

[F] 307.1 High-hazard Group H. High-hazard Group H occupancy includes, among others, the use of a building or structure, or a portion thereof, that involves the manufacturing, processing, generation or storage of materials that constitute a physical or health hazard in quantities in excess of those allowed in control areas complying with Section 414, based on the maximum allowable quantity limits for control areas set forth in Tables 307.1(1) and 307.1(2). Hazardous occupancies are classified in Groups H-1, H-2, H-3, H-4 and H-5 and shall be in accordance with this section, the requirements of Section 415 and the *California Fire Code*. Hazardous materials stored or used on top of roofs or canopies shall be classified as rooftop storage or use and shall comply with the *California Fire Code*.

[F] TABLE 307.1(1)—MAXIMUM ALLOWABLE QUANTITY PER CONTROL AREA OF HAZARDOUS MATERIALS POSING A PHYSICAL HAZARD[a, i, l, m]

MATERIAL	CLASS	GROUP WHEN THE MAXIMUM ALLOWABLE QUANTITY IS EXCEEDED	STORAGE[b]			USE-CLOSED SYSTEMS[b]			USE-OPEN SYSTEMS[b]	
			Solid pounds (cubic feet)	Liquid gallons (pounds)	Gas (cubic feet at NTP)	Solid pounds (cubic feet)	Liquid gallons (pounds)	Gas (cubic feet at NTP)	Solid pounds (cubic feet)	Liquid gallons (pounds)
Combustible dust	NA	H-2	See Note o	NA	NA	See Note o	NA	NA	See Note o	NA
Combustible fiber [o]	Loose	H-3	(100)	NA	NA	(100)	NA	NA	(20)	NA
	Baled		(1,000)			(1,000)			(200)	
Combustible liquid[n]	II	H-2 or H-3	NA	120[d, e]	NA	NA	120[d]	NA	NA	30[d]
	IIIA	H-2 or H-3		330[d, e]			330[d]			80[d]
	IIIB	NA		13,200[e, f]			13,200[f]			3,300[f]
Cryogenic flammable	NA	H-2	NA	45[d]	NA	NA	45[d]	NA	NA	10[d]
Cryogenic inert	NA	NA	NA	NA	NL	NA	NA	NL	NA	NA
Cryogenic oxidizing	NA	H-3	NA	45[d]	NA	NA	45[d]	NA	NA	10[d]
Explosives	Division 1.1	H-1	1[e, g]	(1)[e, g]	NA	0.25[g]	(0.25)[g]	NA	0.25[g]	(0.25)[g]
	Division 1.2	H-1	1[e, g]	(1)[e, g]		0.25[g]	(0.25)[g]		0.25[g]	(0.25)[g]
	Division 1.3	H-1 or H-2	5[e, g]	(5)[e, g]		1[g]	(1)[g]		1[g]	(1)[g]
	Division 1.4	H-3	50[e, g]	(50)[e, g]		50[g]	(50)[g]		NA	NA
	Division 1.4G	H-3	125[e, k]	NA		NA	NA		NA	NA
	Division 1.5	H-1	1[e, g]	(1)[e, g]		0.25[g]	(0.25)[g]		0.25[g]	(0.25)[g]
	Division 1.6	H-1	1[e, g]	NA		NA	NA		NA	NA
Flammable gas	Gaseous 1A (High BV)[p]	H-2	NA	NA	1,000[d, e]	NA	NA	1,000[d, e]	NA	NA
	Gaseous 1B (High BV)[p]									
	Gaseous 1B (Low BV)[p]				162,500[d, e]			162,500[d, e]		
	Liquefied 1A (High BV)[p]			(150)[d, e]	NA		(150)[d, e]	NA		
	Liquefied 1B (High BV)[p]									
	1B (Low BV)[p]			(10,000)[d, e]			(10,000)[d, e]			
Flammable liquid [n]	IA	H-2 or H-3	NA	30[d, e]	NA	NA	30[d]	NA	NA	10[d]
	IB and IC			120[d, e]			120[d]			30[d]
Flammable liquid, combination (IA, IB, IC)[n]	NA	H-2 or H-3	NA	120[d, e, h]	NA	NA	120[d, h]	NA	NA	30[d, h]
Flammable solid	NA	H-3	125[d, e]	NA	NA	125[d]	NA	NA	25[d]	NA
Inert gas	Gaseous	NA	NA	NA	NL	NA	NA	NL	NA	NA
	Liquefied	NA	NA	NA	NL	NA	NA	NL	NA	NA

[F] TABLE 307.1(1)—MAXIMUM ALLOWABLE QUANTITY PER CONTROL AREA OF HAZARDOUS MATERIALS POSING A PHYSICAL HAZARD[a, i, l, m]—continued

MATERIAL	CLASS	GROUP WHEN THE MAXIMUM ALLOWABLE QUANTITY IS EXCEEDED	STORAGE[b]			USE-CLOSED SYSTEMS[b]			USE-OPEN SYSTEMS[b]	
			Solid pounds (cubic feet)	Liquid gallons (pounds)	Gas (cubic feet at NTP)	Solid pounds (cubic feet)	Liquid gallons (pounds)	Gas (cubic feet at NTP)	Solid pounds (cubic feet)	Liquid gallons (pounds)
Organic peroxide	UD	H-1	1[e, g]	(1)[e, g]	NA	0.25[g]	(0.25)[g]	NA	0.25[g]	(0.25)[g]
	I	H-2	5[d, e]	(5)[d, e]		1[d]	(1)[d]		1[d]	(1)[d]
	II	H-3	50[d, e]	(50)[d, e]		50[d]	(50)[d]		10[d]	(10)[d]
	III	H-3	125[d, e]	(125)[d, e]		125[d]	(125)[d]		25[d]	(25)[d]
	IV	NA	NL	NL		NL	NL		NL	NL
	V	NA	NL	NL		NL	NL		NL	NL
Oxidizer	4	H-1	1[g]	(1)[e, g]	NA	0.25[g]	(0.25)[g]	NA	0.25[g]	(0.25)[g]
	3[j]	H-2 or H-3	10[d, e]	(10)[d, e]		2[d]	(2)[d]		2[d]	(2)[d]
	2	H-3	250[d, e]	(250)[d, e]		250[d]	(250)[d]		50[d]	(50)[d]
	1	NA	4,000[e, f]	(4,000)[e, f]		4,000[f]	(4,000)[f]		1,000[f]	(1,000)[f]
Oxidizing gas	Gaseous	H-3	NA	NA	1,500[d, e]	NA	NA	1,500[d, e]	NA	NA
	Liquefied			(150)[d, e]	NA		(150)[d, e]	NA		
Pyrophoric	NA	H-2	4[e, g]	(4)[e, g]	50[e, g]	1[g]	(1)[g]	10[e, g]	0	0
Unstable (reactive)	4	H-1	1[e, g]	(1)[e, g]	10[e, g]	0.25[g]	(0.25)[g]	2[e, g]	0.25[g]	(0.25)[g]
	3	H-1 or H-2	5[d, e]	(5)[d, e]	50[d, e]	1[d]	(1)[d]	10[d, e]	1[d]	(1)[d]
	2	H-3	50[d, e]	(50)[d, e]	750[d, e]	50[d]	(50)[d]	750[d, e]	10[d]	(10)[d]
	1	NA	NL	NL	NL	NL	NL	NL	NL	NL
Water reactive	3	H-2	5[d, e]	(5)[d, e]	NA	5[d]	(5)[d]	NA	1[d]	(1)[d]
	2	H-3	50[d, e]	(50)[d, e]		50[d]	(50)[d]		10[d]	(10)[d]
	1	NA	NL	NL		NL	NL		NL	NL

For SI: 1 cubic foot = 0.028 m^3, 1 pound = 0.454 kg, 1 gallon = 3.785 L.

NL = Not Limited; NA = Not Applicable; UD = Unclassified Detonable.

a. For use of control areas, see Section 414.2.

b. The aggregate quantity in use and storage shall not exceed the maximum allowable quantity for storage, including applicable increases.

c. *Reserved.*

d. ***[SFM]*** *In other than Group L occupancies,* maximum allowable quantities shall be increased 100 percent in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1. Where Note e also applies, the increase for both notes shall be applied accumulatively.

e. Maximum allowable quantities shall be increased 100 percent when stored in approved storage cabinets, day boxes, gas cabinets, gas rooms or exhausted enclosures or in listed safety cans in accordance with Section 5003.9.10 of the *California Fire Code*. Where Note d also applies, the increase for both notes shall be applied accumulatively.

f. Quantities shall not be limited in a building equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.

g. Allowed only in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.

h. Containing not more than the maximum allowable quantity per control area of Class IA, IB or IC flammable liquids.

i. Quantities in parentheses indicate quantity units in parentheses at the head of each column.

j. A maximum quantity of 220 pounds of solid or 22 gallons of liquid Class 3 oxidizers is allowed when such materials are necessary for maintenance purposes, operation or sanitation of equipment when the storage containers and the manner of storage are approved.

k. Net weight of the pyrotechnic composition of the fireworks. Where the net weight of the pyrotechnic composition of the fireworks is not known, 25 percent of the gross weight of the fireworks, including packaging, shall be used.

l. For gallons of liquids, divide the amount in pounds by 10 in accordance with Section 5003.1.2 of the *California Fire Code*.

m. For oxidizers, unstable (reactive) materials, and water-reactive materials stored or displayed in Group M occupancies or stored in Group S occupancies, see Section 414.2.5.1.

n. For flammable and combustible liquid storage in Group M occupancy wholesale and retail sales uses, see Section 414.2.5.2.

o. Where manufactured, generated or used in such a manner that the concentration and conditions create a fire or explosion hazard based on information prepared in accordance with Section 414.1.3.

p. *High Burning Velocity* (High BV) Category 1B flammable gas has a burning velocity greater than 3.9 inches per second (10 cm/s). *Low Burning Velocity* (Low BV) Category 1B flammable gas has a burning velocity of 3.9 inches per second (10 cm/s) or less.

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[F] TABLE 307.1(2)—MAXIMUM ALLOWABLE QUANTITY PER CONTROL AREA OF HAZARDOUS MATERIALS POSING A HEALTH HAZARD[a, h, i]

MATERIAL	STORAGE[b]			USE-CLOSED SYSTEMS[b]			USE-OPEN SYSTEMS[b]	
	Solid pounds[d, e, f]	Liquid gallons (pounds)[d, e, f]	Gas cubic feet at NTP (pounds)[d]	Solid pounds[d]	Liquid gallons (pounds)[d]	Gas cubic feet at NTP (pounds)[d]	Solid pounds[d]	Liquid gallons (pounds)[d]
Corrosives	5,000	500	Gaseous 810[e] Liquefied (150)	5,000	500	Gaseous 810[e] Liquefied (150)	1,000	100
Highly Toxic	10	(10)	Gaseous 20[g] Liquefied (4)[g]	10	(10)	Gaseous 20[g] Liquefied (4)[g]	3	(3)
Toxic	500	(500)	Gaseous 810[e] Liquefied (150)[e]	500	(500)	Gaseous 810[e] Liquefied (150)[e]	125	(125)

For SI: 1 cubic foot = 0.028 m^3, 1 pound = 0.454 kg, 1 gallon = 3.785 L.

a. For use of control areas, see Section 414.2.

b. The aggregate quantity in use and storage shall not exceed the maximum allowable quantity for storage, including applicable increases.

c. *Reserved.*

d. ***[SFM]*** *In other than Group L occupancies,* maximum allowable quantities shall be increased 100 percent in buildings equipped throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.1. Where Note e also applies, the increase for both notes shall be applied accumulatively.

e. Maximum allowable quantities shall be increased 100 percent where stored in approved storage cabinets, gas cabinets or exhausted enclosures as specified in the *California Fire Code*. Where Note d also applies, the increase for both notes shall be applied accumulatively.

f. For corrosive, highly toxic and toxic materials stored or displayed in Group M occupancies or stored in Group S occupancies, see Section 414.2.5.1.

g. Allowed only where stored in approved exhausted gas cabinets or exhausted enclosures as specified in the *California Fire Code*.

h. Quantities in parentheses indicate quantity units in parentheses at the head of each column.

i. For gallons of liquids, divide the amount in pounds by 10 in accordance with Section 5003.1.2 of the *California Fire Code*.

[F] 307.1.1 Occupancy Exemptions. Storage, use and handling of hazardous materials in accordance with Table 307.1.1 shall not be counted as contributing to Maximum Allowable Quantities and shall not cause classification of an occupancy to be Group H. Such storage, use and handling shall comply with applicable provisions of the *California Fire Code*.

TABLE 307.1.1—HAZARDOUS MATERIALS EXEMPTIONS[a]

MATERIAL CLASSIFICATION	OCCUPANCY OR APPLICATION	EXEMPTION
Combustible fiber	Baled cotton	Densely packed baled cotton shall not be classified as combustible fiber, provided that the bales comply with the packing requirements of ISO 8115.
Corrosive	Building materials	The quantity of commonly used building materials that are classified as corrosive materials is not limited.
	Personal and household products	The quantity of personal and household products that are classified as corrosive materials is not limited in retail displays, provided that the products are in original packaging.
	Retail and wholesale sales occupancies	The quantity of medicines, foodstuffs or consumer products, and cosmetics containing not more than 50 percent by volume of water-miscible liquids, with the remainder of the solutions not being flammable, is not limited. To qualify for this allowance, such materials shall be packaged in individual containers not exceeding 1.3 gallons.
Explosives	Groups B, F, M and S	Storage of special industrial explosive devices is not limited.
	Groups M and R-3	Storage of black powder, smokeless propellant and small arms primers is not limited.
Flammable and combustible liquids and gases	Aerosols	Buildings and structures occupied for the storage of aerosol products, aerosol cooking spray products, or plastic aerosol 3 products shall be classified as Group S-1.
	Alcoholic beverages	The quantity of alcoholic beverages in liquor stores and distributors without bulk storage is not limited.
		The quantity of alcoholic beverages in distilling or brewing of beverages is not limited.

TABLE 307.1.1—HAZARDOUS MATERIALS EXEMPTIONS[a]—continued

MATERIAL CLASSIFICATION	OCCUPANCY OR APPLICATION	EXEMPTION
Flammable and combustible liquids and gases—continued	Alcoholic beverages—continued	The storage quantity of beer, distilled spirits and wines in barrels and casks is not limited.
		The quantity of alcoholic beverages in retail and wholesale sales occupancies is not limited. To qualify for this allowance, beverages shall be packaged in individual containers not exceeding 1.3 gallons.
	Cleaning establishments with combustible liquid solvents	The quantity of combustible liquid solvents used in closed systems and having a flash point at or above 140°F is not limited. To qualify for this allowance, equipment shall be listed by an approved testing agency and the occupancy shall be separated from all other areas of the building by 1-hour fire barriers constructed in accordance with Section 707 or 1-hour horizontal assemblies constructed in accordance with Section 711, or both
		The quantity of combustible liquid solvents having a flash point at or above 200°F is not limited.
	Closed piping systems	The quantity of flammable and combustible liquids and gases utilized for the operation of machinery or equipment is not limited.
	Fuel	The quantity of liquid or gaseous fuel in fuel tanks on vehicles or motorized equipment is not limited.
		The quantity of gaseous fuels in piping systems and fixed appliances regulated by the *International Fuel Gas Code* is not limited.
		The quantity of liquid fuels in piping systems and fixed appliances regulated by the *California Mechanical Code* is not limited.
	Flammable finishing operations using flammable and combustible liquids	Buildings and structures occupied for the application of flammable finishes shall comply with Section 416.
	Fuel oil	The quantity of fuel oil storage complying with Section 605.4.2 of the *California Fire Code* is not limited.
	Hand sanitizer	The quantity of alcohol-based hand rubs (ABHR) classified as Class I or II liquids in dispensers installed in accordance with Sections 5705.5 and 5705.5.1 of the *California Fire Code* is not limited. The location of the ABHR dispensers shall be provided in the construction documents.
	Retail and wholesale sales occupancies with flammable and combustible liquids	The quantity of medicines, foodstuffs or consumer products, and cosmetics containing not more than 50 percent by volume of water-miscible liquids, with the remainder of the solutions not being flammable, is not limited. To qualify for this allowance, such materials shall be packaged in individual containers not exceeding 1.3 gallons.
Highly toxic and toxic materials	Retail and wholesale sales occupancies	The quantity of medicines, foodstuffs or consumer products, and cosmetics containing not more than 50 percent by volume of water-miscible liquids, with the remainder of the solutions not being flammable, is not limited. To qualify for this allowance, such materials shall be packaged in individual containers not exceeding 1.3 gallons.
Any	Agricultural materials	The quantity of agricultural materials stored or utilized for agricultural purposes on the premises is not limited.
	Energy storage	The quantity of hazardous materials in stationary storage battery systems is not limited.
		The quantity of hazardous materials in stationary fuel cell power systems is not limited.
		The quantity of hazardous materials in capacitor energy storage systems is not limited.
	Refrigeration Systems	The quantity of refrigerants in refrigeration systems is not limited.

For SI: 1 gallon = 3.785L, °C = (°F - 32)/1.8.

a. Exempted materials and conditions listed in this table are required to comply with applicable provisions of the *California Fire Code*.

[F] 307.2 Hazardous materials. Hazardous materials in any quantity shall conform to the requirements of this code, including Section 414, and the *California Fire Code*.

[F] 307.3 High-hazard Group H-1. Buildings and structures containing materials that pose a detonation hazard shall be classified as Group H-1. Such materials shall include, but not be limited to, the following:

Detonable pyrophoric materials

Explosives:

Division 1.1

Division 1.2

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Division 1.3

Division 1.4

Division 1.5

Division 1.6

Organic peroxides, unclassified detonable

Oxidizers, Class 4

Unstable (reactive) materials, Class 3 detonable and Class 4

[F] 307.3.1 Occupancies containing explosives not classified as H-1. The following occupancies containing explosive materials shall be classified as follows:

1. Division 1.3 explosive materials that are used and maintained in a form where either confinement or configuration will not elevate the hazard from a mass fire to mass explosion hazard shall be allowed in Group H-2 occupancies.
2. Division 1.4 explosive materials shall be allowed in Group H-3 occupancies.
3. Articles, including articles packaged for shipment, that are not regulated as a Division 1.4 explosive under Bureau of Alcohol, Tobacco, Firearms and Explosives regulations, or unpackaged articles used in process operations that do not propagate a detonation or deflagration between articles shall be allowed in Group H-3 occupancies.

[F] 307.4 High-hazard Group H-2. Buildings and structures containing materials that pose a deflagration hazard or a hazard from accelerated burning shall be classified as Group H-2. Such materials shall include, but not be limited to, the following:

Class I, II or IIIA flammable or combustible liquids that are used or stored in normally open containers or systems, or in closed containers or systems pressurized at more than 15 pounds per square inch gauge (103.4 kPa).

Combustible dusts where manufactured, generated or used in such a manner that the concentration and conditions create a fire or explosion hazard based on information prepared in accordance with Section 414.1.3.

Cryogenic fluids, flammable.

Category 1A flammable gases.

Category 1B flammable gases having a burning velocity greater than 3.9 inches per second (10 cm/s).

Organic peroxides, Class I.

Oxidizers, Class 3, that are used or stored in normally open containers or systems, or in closed containers or systems pressurized at more than 15 pounds per square inch gauge (103 kPa).

Pyrophoric liquids, solids and gases, nondetonable.

Unstable (reactive) materials, Class 3, nondetonable.

Water-reactive materials, Class 3.

[F] 307.5 High-hazard Group H-3. Buildings and structures containing materials that readily support combustion or that pose a physical hazard shall be classified as Group H-3. Such materials shall include, but not be limited to, the following:

Class I, II or IIIA flammable or combustible liquids that are used or stored in normally closed containers or systems pressurized at 15 pounds per square inch gauge (103.4 kPa) or less

Combustible fibers, other than densely packed baled cotton, where manufactured, generated or used in such a manner that the concentration and conditions create a fire or explosion hazard based on information prepared in accordance with Section 414.1.3

Consumer fireworks, 1.4G (Class C, Common)

Cryogenic fluids, oxidizing

Category 1B flammable gases having a burning velocity of 3.9 inches per second (10 cm/s) or less.

Flammable solids

Organic peroxides, Class II and III

Oxidizers, Class 2

Oxidizers, Class 3, that are used or stored in normally closed containers or systems pressurized at 15 pounds per square inch gauge (103 kPa) or less

Oxidizing gases

Unstable (reactive) materials, Class 2

Water-reactive materials, Class 2

[F] 307.6 High-hazard Group H-4. Buildings and structures containing materials that are health hazards shall be classified as Group H-4. Such materials shall include, but not be limited to, the following:

Corrosives

Highly toxic materials

Toxic materials

[F] 307.7 High-hazard Group H-5. Semiconductor fabrication facilities and comparable research and development areas in which hazardous production materials (HPM) are used and the aggregate quantity of materials is in excess of those specified in Tables 307.1(1) and 307.1(2) shall be classified as Group H-5. Such facilities and areas shall be designed and constructed in accordance with Section 415.11.

[F] 307.8 Multiple hazards. Buildings and structures containing a material or materials representing hazards that are classified in one or more of Groups H-1, H-2, H-3 and H-4 shall conform to the code requirements for each of the occupancies so classified.

SECTION 308—INSTITUTIONAL GROUP I

308.1 Institutional Group I. Institutional Group I occupancy includes, among others, the use of a building or structure, or a portion thereof, in which care or supervision is provided to persons who are or are incapable of self-preservation without physical assistance or in which persons are detained for penal or correctional purposes or in which the liberty of the occupants is restricted. Institutional occupancies shall be classified as Group I-2, I-3 or I-4. *Restraint shall not be permitted in any building except in Group I-2 occupancies constructed for such use in accordance with Section 407.1.1 and Group I-3 occupancies constructed for such use in accordance with Section 408.1.2.*

Where occupancies house both ambulatory and nonambulatory persons, the more restrictive requirements shall apply.

308.2 Institutional Group I-1. *Not used. (See Group R-2.1 Section 310.1.)*

308.3 Institutional Group I-2. Institutional Group I-2 occupancy shall include buildings and structures used for medical care on a 24-hour basis for more than five persons who are incapable of self-preservation *or classified as nonambulatory or bedridden.* This group shall include, but not be limited to, the following:

Foster care facilities

Detoxification facilities

Hospitals

Nursing homes

Psychiatric hospitals

308.3.*1* Five or fewer persons receiving *medical care*. A facility with five or fewer persons receiving medical care shall be classified as Group R-3*.1* or shall comply with the *California Residential Code* provided an automatic sprinkler system is installed in accordance with Section 903.3.1.3 of this code or Section *R309* of the *California Residential Code*.

308.3.2 Reserved.

308.4 Institutional Group I-3. Institutional Group I-3 occupancy shall include buildings *or portions of buildings* and structures that are inhabited by more than five persons who are under restraint or security. A Group I-3 facility is occupied by persons who are generally incapable of self-preservation due to security measures not under the occupants' control *which includes persons restrained.* This group shall include, but not be limited to, the following:

Correctional centers
Correctional hospitals
Correctional nursing facilities
Correctional mental health facilities
Correctional treatment centers
Courthouse holding facility
Detention centers
Detention treatment room
Jails
Juvenile halls
Prerelease centers
Prisons
Reformatories
Secure interview rooms
Temporary holding facility

Buildings of Group I-3 shall be classified as one of the occupancy conditions specified in Sections 308.4.1 through *308.5.8* and shall comply with Section 408.

308.4.1 Condition 1. This occupancy condition shall include buildings in which free movement is allowed from sleeping areas, and other spaces where access or occupancy is permitted, to the exterior via means of egress without restraint. A Condition 1 facility is permitted to be constructed as Group R.

308.4.2 Condition 2. This occupancy condition shall include buildings in which free movement is allowed from sleeping areas and any other occupied smoke compartment to one or more other smoke compartments. Egress to the exterior is impeded by locked exits.

308.4.3 Condition 3. This occupancy condition shall include buildings in which free movement is allowed within individual smoke compartments, such as within a residential unit composed of individual sleeping units and group activity spaces, where

egress is impeded by remote-controlled release of means of egress from such a smoke compartment to another smoke compartment.

308.4.4 Condition 4. This occupancy condition shall include buildings in which free movement is restricted from an occupied space. Remote-controlled release is provided to permit movement from sleeping units, activity spaces and other occupied areas within the smoke compartment to other smoke compartments.

308.4.5 Condition 5. This occupancy condition shall include buildings in which free movement is restricted from an occupied space. Staff-controlled manual release is provided to permit movement from sleeping units, activity spaces and other occupied areas within the smoke compartment to other smoke compartments.

308.4.6 Condition 6. *This occupancy condition shall include buildings containing only one temporary holding facility with six or fewer persons under restraint or security where the building is protected throughout with a monitored automatic sprinkler system installed in accordance with Section 903.3.1.1 and where the temporary holding facility is protected throughout with an automatic fire alarm system with notification appliances. A Condition 6 building shall be permitted to be classified as a Group B occupancy.*

308.4.7 Condition 7. *This occupancy condition shall include buildings containing only one temporary holding facility with nine or less persons under restraint or security where limited to the first or second story, provided the building complies with Section 408.1.2.6. A Condition 7 building shall be permitted to be classified as a Group B occupancy.*

308.4.8 Condition 8. *This occupancy condition shall include buildings containing not more than four secure interview rooms located within the same fire area where not more than six occupants under restraint are located in the same fire area. A Condition 8 building shall be is permitted to be classified as a Group B occupancy, provided the requirements in Section 408.1.2.7 are met.*

308.4.9 Condition 9. This occupancy condition shall include buildings where the use of the building is for correctional medical care or correctional mental health care.

308.5 Institutional Group I-4, day care facilities. Institutional Group I-4 occupancy shall include buildings and structures occupied by more than *six clients* of any age who receive custodial care for fewer than 24 hours per day by persons other than parents or guardians; relatives by blood, marriage or adoption; and in a place other than the home of the *clients* cared for. This group shall include, but not be limited to, the following:

Adult day care

Child day care *(not classified as Group E)*

308.5.1 Classification as Group E. A child day care facility that provides care for more than *six* but not more than 100 children *under 36 months* of age, where the rooms in which the children are cared for are located on a level of exit discharge serving such rooms and each of these child care rooms has an exit door directly to the exterior, shall be classified as Group E.

308.5.1.1 Special provisions. *See Section 452.1.4 of the California Building Code for child care locations above or below the first story.*

308.5.2 Within a place of religious worship. Rooms and spaces within places of religious worship providing such care during religious functions shall be *licensed by the California State Department Health Services as required by Health and Safety Code Division 2 Chapter 3.5.*

308.5.3 Five or fewer persons receiving care. A facility having five or fewer persons receiving custodial care shall be *licensed pursuant to Health and Safety Code Division 2 Chapter 3.5 or 3.6.*

308.5.4 *Six* or fewer persons receiving care in a dwelling unit. A facility such as the above within a dwelling unit and having *six* or fewer persons receiving custodial care shall be classified as a Group R-3 occupancy*, where occupants are not capable of responding to an emergency situation without physical assistance from the staff shall be classified as a Group I-4.*

SECTION 309—MERCANTILE GROUP M

309.1 Mercantile Group M. Mercantile Group M occupancy includes, among others, the use of a building or structure or a portion thereof for the display and sale of merchandise, and involves stocks of goods, wares or merchandise incidental to such purposes and where the public has access. Mercantile occupancies shall include, but not be limited to, the following:

Department stores

Drug stores

Greenhouses for display and sale of plants that provide public access

Markets

Motor fuel-dispensing facilities

Retail or wholesale stores

Sales rooms

309.2 Quantity of hazardous materials. The aggregate quantity of nonflammable solid and nonflammable or noncombustible liquid hazardous materials stored or displayed in a single control area of a Group M occupancy shall not exceed the quantities in Table 414.2.5.1.

309.3 Motor fuel-dispensing facilities. Motor fuel-dispensing facilities shall comply with Section 406.7.

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SECTION 310—RESIDENTIAL GROUP R

310.1 Residential Group R. Residential Group R includes, among others, the use of a building or structure, or a portion thereof, for sleeping purposes when not classified as an Institutional Group I or when not regulated by the *California Residential Code*. Group R occupancies not constructed in accordance with the *California Residential Code* as permitted by Sections 310.4.1 and 310.4.2 shall comply with Section 420.

310.2 Residential Group R-1. Residential Group R-1 occupancies containing sleeping units or more than two dwelling units where the occupants are primarily transient in nature, including:

Boarding houses (transient) with more than 10 occupants

Congregate *residences* (transient) with more than 10 occupants

Hotels (transient)

Motels (transient)

[HCD 1] *Efficiency dwelling units (transient)*

310.3 Residential Group R-2. Residential Group R-2 occupancies containing sleeping units or more than two dwelling units where the occupants are primarily permanent in nature, including:

Apartment houses

Large family child care

Small family child care

Congregate living facilities (nontransient) with more than 16 occupants

Boarding houses (nontransient)

Convents

Dormitories

Emergency services living quarters

Fraternities and sororities

Monasteries

Hotels (nontransient)

Live/work units

Motels (nontransient)

Vacation timeshare properties

[HCD 1] *Efficiency dwelling units (transient)*

310.3.1 Residential Group R-2.1. *Residential Group R-2.1 occupancies shall include buildings, structures or parts thereof housing clients, on a 24-hour basis, who because of age, mental disability or other reasons, live in a supervised residential environment that provides personal care services.*

This occupancy may contain more than six nonambulatory and/or bedridden clients. (See Section 435 Special Provisions for Licensed 24-Hour Care Facilities in a Group R-2.1, R-3.1 or R-4 Occupancy). This group shall include, but not be limited to, the following:

Assisted living facilities such as:
Residential care facilities,
Residential care facilities for the elderly (RCFEs),
Adult residential facilities,
Congregate living health facilities,
Group homes,
Residential care facilities for the chronically ill,
Congregate living health facilities for the terminally ill.

Social rehabilitation facilities such as:
Halfway houses,
Community correctional centers,
Community treatment programs,
Work furlough programs,
Alcoholism or drug abuse recovery or treatment facilities.

310.3.2 Residential Group R-2.2 (CDCR Only). *Residential occupancies operated by CDCR in a community located facility that provides housing and community-based program services for nontransient ambulatory participants in a nonlicensed facility with 24/7 supervision.*

310.4 Residential Group R-3. Residential Group R-3 occupancies where the occupants are primarily permanent in nature and not classified as Group R-1, *R-2.1, R-2.2, R-3.1,* R-4 or I, including:

Buildings that do not contain more than two dwelling units

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Care facilities that provide accommodations for five or fewer persons receiving care

Congregate *residences* (nontransient) with 16 or fewer occupants

Boarding houses (nontransient)

Convents

Dormitories

Emergency services living quarters

Fraternities and sororities

Monasteries

Congregate *residences* (transient) with 10 or fewer occupants

[HCD 1] *Efficiency dwelling units*

Boarding houses (transient)

Adult care facilities that provide accommodations for six or fewer clients of any age for less than 24 hours

Licensing categories that may use this classification include:

Adult Day Programs

Alcoholism or drug abuse recovery homes (ambulatory only)

Child-care facilities that provide accommodations for six or fewer clients of any age for less than 24 hours

Licensing categories that may use this classification include, but are not limited to:

Day-Care Center for Mildly Ill Children,
Infant Care Center,
School Age Child Day-Care Center

Family Day-Care Homes that provide accommodations for 14 or fewer children, in the provider's own home for less than 24-hours

Adult care and child-care facilities that are within a single family home are permitted to comply with the California Residential Code

Lodging houses with five or fewer guest rooms

310.4.1 ***Residential Group R-3.1.*** *This occupancy group may include facilities licensed by a governmental agency for a residentially based 24-hour care facility providing accommodations for six or fewer clients of any age. Clients may be classified as ambulatory, nonambulatory or bedridden. A Group R-3.1 occupancy shall meet the requirements for construction as defined for Group R-3, except as otherwise provided for in Section 435 Special Provisions For Licensed 24-Hour Care Facilities in a Group R-2.1, R-3.1 or R-4 Occupancy. This group may include:*

Adult residential facilities

Congregate living health facilities

Intermediate care facilities for the developmentally disabled habilitative

Intermediate care facilities for the developmentally disabled nursing

Nurseries for the full-time care of children under the age of six, but not including "infants" as defined in Chapter 2

Residential care facilities for the elderly

Small family homes and residential care facilities for the chronically ill

Exception: *Group Homes licensed by the Department of Social Services which provide nonmedical board, room and care for six or fewer ambulatory children or children two years of age or younger, and which do not have any nonambulatory clients shall not be subject to regulations found in Section 435.*

Pursuant to Health and Safety Code Section 13143 with respect to these exempted facilities, no city, county or public district shall adopt or enforce any requirement for the prevention of fire or for the protection of life and property against fire and panic unless the requirement would be applicable to a structure regardless of the special occupancy. Nothing shall restrict the application of state or local housing standards to such facilities if the standards are applicable to residential occupancies and are not based on the use of the structure as a facility for ambulatory children. For the purpose of this exception, ambulatory children do not include relatives of the licensee or the licensee's spouse.

310.4.2 Lodging houses. Owner-occupied lodging houses with five or fewer guest rooms shall be constructed in accordance with this code or the *California Residential Code,* provided that facilities constructed using the *California Residential Code* are protected by an automatic sprinkler system installed in accordance with *Section 903.3.1.3 or* Section *R309.1.1* of the *California Residential Code.*

310.5 Residential Group R-4. Residential Group R-4 occupancy shall include buildings, structures or portions thereof for more than *six ambulatory clients,* but not more than 16 persons, excluding staff, who reside on a 24-hour basis in a supervised residential environment and receive custodial care. *The persons receiving care are capable of self-preservation. This occupancy classification may*

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include a maximum six nonambulatory or bedridden clients (see Section 435, Special Provisions for Licensed 24-Hour Care Facilities in a Group R-2.1, R-3.1 or R-4). Group R-4 occupancies shall meet the requirements in Section 420. This group shall include, but not be limited to, the following:

Assisted living facilities such as:
Residential care facilities,
Residential care facilities for the elderly (RCFE),
Adult residential facilities,
Congregate living health facilities,
Group homes.

Social rehabilitation facilities such as:
Halfway houses,
Community treatment programs,
Work furlough programs,
Alcoholism or drug abuse recovery or treatment facilities.

310.6 Large family day-care homes. *See Section 455.*

SECTION 311—STORAGE GROUP S

311.1 Storage Group S. Storage Group S occupancy includes, among others, the use of a building or structure, or a portion thereof, for storage that is not classified as a hazardous occupancy.

311.1.1 Accessory storage spaces. A room or space used for storage purposes that is accessory to another occupancy shall be classified as part of that occupancy.

311.1.2 Combustible storage. High-piled stock or rack storage, or attic, under-floor and concealed spaces used for storage of combustible materials, shall be in accordance with Section 413.

311.2 Moderate-hazard storage, Group S-1. Storage Group S-1 occupancies are buildings occupied for storage uses that are not classified as Group S-2, including, but not limited to, storage of the following:

Aerosol products, Levels 2 and 3, aerosol cooking spray, plastic aerosol 3 (PA3)

Aircraft hangar (storage and repair)

Bags: cloth, burlap and paper

Bamboos and rattan

Baskets

Belting: canvas and leather

Beverages over 20-percent alcohol content

Books and paper in rolls or packs

Boots and shoes

Buttons, including cloth covered, pearl or bone

Cardboard and cardboard boxes

Clothing, woolen wearing apparel

Cordage

Dry boat storage (indoor)

Furniture

Furs

Glues, mucilage, pastes and size

Grains

Horns and combs, other than celluloid

Leather

Linoleum

Lithium-ion or lithium metal batteries

Lumber

Motor vehicle repair garages complying with the maximum allowable quantities of hazardous materials specified in Table 307.1(1) (see Section 406.8)

Photo engravings

Resilient flooring

Self-service storage facility (mini-storage)

Silks

Soaps
Sugar
Tires, bulk storage of
Tobacco, cigars, cigarettes and snuff
Upholstery and mattresses
Vehicle repair garages for vehicles powered by lithium-ion or lithium metal batteries
Wax candles

311.2.1 Aircraft hangers. Aircraft hangars used for storage or repair shall comply with Section 412.3.

311.2.2 Motor vehicle repair garages. Motor vehicle repair garages shall comply with Section 406.8.

311.3 Low-hazard storage, Group S-2. Storage Group S-2 occupancies include, among others, buildings used for the storage of noncombustible materials such as products on wood pallets or in paper cartons with or without single thickness divisions; or in paper wrappings. Such products are permitted to have a negligible amount of plastic trim, such as knobs, handles or film wrapping. Group S-2 storage uses shall include, but not be limited to, storage of the following:

Asbestos
Beverages up to and including 20-percent alcohol
Cement in bags
Chalk and crayons
Dairy products in nonwaxed coated paper containers
Dry cell batteries
Electrical coils
Electrical motors
Empty cans
Food products
Foods in noncombustible containers
Fresh fruits and vegetables in nonplastic trays or containers
Frozen foods
Glass
Glass bottles, empty or filled with noncombustible liquids
Gypsum board
Inert pigments
Ivory
Meats
Metal cabinets
Metal desks with plastic tops and trim
Metal parts
Metals
Mirrors
Oil-filled and other types of distribution transformers
Public parking garages, open or enclosed
Porcelain and pottery
Stoves
Talc and soapstones
Washers and dryers

311.3.1 Public parking garages. Public parking garages shall comply with Section 406.4 and the additional requirements of Section 406.5 for open parking garages or Section 406.6 for enclosed parking garages.

SECTION 312—UTILITY AND MISCELLANEOUS GROUP U

312.1 General. Buildings and structures of an accessory character and miscellaneous structures not classified in any specific occupancy shall be constructed, equipped and maintained to conform to the requirements of this code commensurate with the fire and life hazard incidental to their occupancy. Group U shall include, but not be limited to, the following:

Agricultural buildings

Aircraft hangars, accessory to a one- or two-family residence (see Section 412.4)
Barns
Carports
Communication equipment structures with a gross floor area of less than 1,500 square feet (139 m^2)
Fences more than 7 feet (2134 mm) in height
Grain silos, accessory to a residential occupancy
Livestock shelters
Private garages
Retaining walls
Sheds
Stables
Tanks
Towers

312.1.1 Greenhouses. Greenhouses not classified as another occupancy shall be classified as Use Group U.

312.2 Private garages and carports. Private garages and carports shall comply with Section 406.3.

312.3 Residential aircraft hangars. Aircraft hangars accessory to a one- or two-family residence shall comply with Section 412.4.

SECTION 313—LABORATORIES GROUP L [SFM]

313.1 Group L Laboratories. [SFM] *Group L occupancy includes the use of a building or structure, or a portion thereof, containing one or more laboratory suites as defined in Section 453.*

SECTION 314—ORGANIZED CAMPS GROUP C [SFM]

314.1 Organized Camps Group C. [SFM] *An organized camp is a site with programs and facilities established for the primary purpose of providing an outdoor group living experience with social, spiritual, educational or recreational objectives, for five days or more during one or more seasons of the year.*

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CALIFORNIA BUILDING CODE – MATRIX ADOPTION TABLE
CHAPTER 4 – SPECIAL DETAILED REQUIREMENTS BASED ON OCCUPANCY AND USE

(Matrix Adoption Tables are nonregulatory, intended only as an aid to the code user.
See Chapter 1 for state agency authority and building applications.)

Adopting agency	BSC	BSC-CG	SFM	HCD			DSA			OSHPD							BSCC	DPH	AGR	DWR	CEC	CA	SL	SLC
				1	2	1/AC	AC	SS	SS/CC	1	1R	2	3	4	5	6								
Adopt entire chapter	X							X	X	X	X	X		X	X	X								
Adopt entire chapter as amended (amended sections listed below)			X	X	X								X											
Adopt only those sections that are listed below						X	X																X	
Chapter / Section																								
403			X																					
403.1			X																					
403.2			X																					
403.2.1			X																					
403.2.1.1			X																					
403.3			X																					
403.3.1			X																					
403.3.1.2			X																					
403.3.2			X																					
403.3.2.1			X																					
403.3.3			X																					
403.3.5			X																					
403.4.7			X																					
403.4.8.1			X																					
403.5.4			X																					
403.6			X																					
403.7			X																					
404.5			X																					
404.6			X																					
404.12			X																					
406.2.1			X	X	X																			
406.2.2				X	X																			
406.2.3						X	X																	
406.2.7				X	X	X																		
406.3.1			X																					
406.6.4.1			X																					
406.9			X																					
406.9.1			X																					
406.9.2			X																					
406.9.3			X																					
407.1			X																					
407.1.1			X																					
407.2			X																					
407.2.1			X																					
407.2.2			X																					
407.2.3			X																					
407.2.5			X																					

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CALIFORNIA BUILDING CODE – MATRIX ADOPTION TABLE
CHAPTER 4 – SPECIAL DETAILED REQUIREMENTS BASED ON OCCUPANCY AND USE—continued

Adopting agency	BSC	BSC-CG	SFM	HCD			DSA			OSHPD							BSCC	DPH	AGR	DWR	CEC	CA	SL	SLC
				1	2	1/AC	AC	SS	SS/CC	1	1R	2	3	4	5	6								
Adopt entire chapter	X							X	X	X	X	X		X	X	X								
Adopt entire chapter as amended (amended sections listed below)			X	X	X								X											
Adopt only those sections that are listed below						X	X																X	
Chapter / Section																								
407.2.6			X																					
407.2.7			X																					
407.3			X																					
407.3.1			X																					
407.3.1.1			X																					
407.3.1.2			X																					
407.3.2			X																					
407.4.1.2			X																					
407.4.2.1			X																					
407.4.4.1			X																					
407.4.4.2			X																					
407.4.4.3			X																					
407.4.4.3.1			X																					
407.4.4.3.2			X																					
407.4.4.4 *Reserved*			X																					
407.4.4.6			X																					
407.4.4.6.1			X																					
407.4.5 – 407.4.5.3			X																					
407.5			X																					
407.7 – *407.7.1*			X																					
407.9			X																					
407.10			X																					
407.11			X																					
407.12			X																					
407.13 – 407.13.4			X																					
408.1.2			X																					
408.1.2.1			X																					
408.1.2.2			X																					
408.1.2.3			X																					
408.1.2.4			X																					
408.1.2.5			X																					
408.1.2.6			X																					
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408.1.3			X																					
408.2			X																					
408.2.1			X																					
408.3.1.1			X																					
408.3.6			X																					
408.3.6.1			X																					
408.3.6.2			X																					

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CALIFORNIA BUILDING CODE – MATRIX ADOPTION TABLE
CHAPTER 4 – SPECIAL DETAILED REQUIREMENTS BASED ON OCCUPANCY AND USE—continued

Adopting agency	BSC	BSC-CG	SFM	HCD			DSA			OSHPD							BSCC	DPH	AGR	DWR	CEC	CA	SL	SLC
				1	2	1/AC	AC	SS	SS/CC	1	1R	2	3	4	5	6								
Adopt entire chapter	X							X	X	X	X	X		X	X	X								
Adopt entire chapter as amended (amended sections listed below)			X	X	X								X											
Adopt only those sections that are listed below						X	X																X	
Chapter / Section																								
408.3.6.3			X																					
408.3.6.4			X																					
408.3.8.1			X																					
408.3.9			X																					
408.3.10			X																					
408.3.11			X																					
408.3.12			X																					
Table 408.3.13			X																					
408.4			X																					
408.4.3			X																					
408.5.1			X																					
408.6			X																					
408.6.1			X																					
408.9.1			X																					
408.12			X																					
408.13			X																					
408.14			X																					
408.15			X																					
408.15.1			X																					
408.15.2			X																					
408.15.3			X																					
408.15.3.1			X																					
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408.15.4			X																					
408.15.5			X																					
408.16			X																					
410.2.6			X																					
411.1 – 411.2			X																					
412.2.6							X																	
414.1.1			X																					
Table 414.2.5.4			X																					
414.5			X																					
415.12			X																					
415.12.1			X																					
415.12.1.1			X																					
415.12.1.2			X																					
415.12.1.3			X																					
415.12.1.4			X																					
415.12.1.5			X																					

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CALIFORNIA BUILDING CODE – MATRIX ADOPTION TABLE
CHAPTER 4 – SPECIAL DETAILED REQUIREMENTS BASED ON OCCUPANCY AND USE—continued

Adopting agency	BSC	BSC-CG	SFM	HCD			DSA			OSHPD							BSCC	DPH	AGR	DWR	CEC	CA	SL	SLC
				1	2	1/AC	AC	SS	SS/CC	1	1R	2	3	4	5	6								
Adopt entire chapter	X							X	X	X	X	X		X	X	X								
Adopt entire chapter as amended (amended sections listed below)			X	X	X								X											
Adopt only those sections that are listed below						X	X																X	
Chapter / Section																								
415.13			X																					
415.13.1			X																					
415.13.2			X																					
415.13.3			X																					
420.1			X	X	X																			
420.4			X																					
420.5			X																					
420.6			X																					
420.6.1			X																					
420.6.2			X																					
420.7 *Reserved*			X																					
420.8 *Reserved*			X																					
420.9			X																					
420.10			X																					
420.11.1			X	X	X																			
> *420.12*				X																				
> *420.13*				X		X																		
> *420.14*				X																				
420.15			X																					
420.16			X																					
421.4			X																					
422.1													X											
422.2			X																					
422.3.2			X																					
422.3.4			X																					
422.6			X																					
422.7			X																					
435			X																					
436			X																					
439			X																					
440			X																					
441			X																					
442			X																					
443			X																					
444			X																					
446			X																					
449			X																					
450			X																					
452			X																					
453			X																					
455			X																					

The state agency does not adopt sections identified with the following symbol: †

The Office of the State Fire Marshal's adoption of this chapter or individual sections is applicable to structures regulated by other state agencies pursuant to Section 1.11.

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CHAPTER

4 SPECIAL DETAILED REQUIREMENTS BASED ON OCCUPANCY AND USE

User notes:

About this chapter:	Chapter 4 provides detailed criteria for special uses and occupancies. The unique characteristics of a live/work unit as opposed to a 30-story high-rise building call for specific standards for each. Twenty-seven sections address covered and open mall buildings, atriums, hospitals, stages, buildings where hazardous materials are used and stored, jails and prisons, ambulatory care facilities and storm shelters, among other special occupancy issues.
ICC code Development note:	Code change proposals to sections preceded by the designation [F], [BF] or [BE] will be considered by a code development committee meting during the 2024 (Group A) Code Development Cycle. All other code change proposals will be considered by a code development committee meeting during the 2025 (Group B) Code Development Cycle.

SECTION 401—SCOPE

401.1 Detailed occupancy and use requirements. In addition to the occupancy and construction requirements in this code, the provisions of this chapter apply to the occupancies and use described herein.

SECTION 402—COVERED MALL AND OPEN MALL BUILDINGS

402.1 Applicability. The provisions of this section shall apply to buildings or structures defined herein as covered or open mall buildings not exceeding three floor levels at any point nor more than three stories above grade plane. Except as specifically required by this section, covered and open mall buildings shall meet applicable provisions of this code.

Exceptions:

1. Foyers and lobbies of Group B, R-1 and R-2 occupancies are not required to comply with this section.
2. Buildings need not comply with the provisions of this section where they totally comply with other applicable provisions of this code.

402.1.1 Open mall building perimeter line. For the purpose of this code, a perimeter line shall be established. The perimeter line shall encircle all buildings and structures that comprise the open mall building and shall encompass any open-air interior walkways, open-air courtyards or similar open-air spaces. The perimeter line shall define the extent of the open mall building. Anchor buildings and parking structures shall be outside of the perimeter line and are not considered as part of the open mall building.

402.2 Open space. A covered mall building and attached anchor buildings and parking garages shall be surrounded on all sides by a permanent open space or not less than 60 feet (18 288 mm). An open mall building and anchor buildings and parking garages adjoining the perimeter line shall be surrounded on all sides by a permanent open space of not less than 60 feet (18 288 mm).

Exception: The permanent open space of 60 feet (18 288 mm) shall be permitted to be reduced to not less than 40 feet (12 192 mm), provided that the following requirements are met:

1. The reduced open space shall not be allowed for more than 75 percent of the perimeter of the covered or open mall building and anchor buildings.
2. The exterior wall facing the reduced open space shall have a fire-resistance rating of not less than 3 hours.
3. Openings in the exterior wall facing the reduced open space shall have opening protectives with a fire protection rating of not less than 3 hours.
4. Group E, H, I or R occupancies are not located within the covered or open mall building or anchor buildings.

402.3 Lease plan. Each owner of a covered mall building or of an open mall building shall provide both the building and fire departments with a lease plan showing the location of each occupancy and its exits after the certificate of occupancy has been issued. Modifications or changes in occupancy or use from that shown on the lease plan shall not be made without prior approval of the building official.

402.4 Construction. The construction of covered and open mall buildings, anchor buildings and parking garages associated with a mall building shall comply with Sections 402.4.1 through 402.4.3.

402.4.1 Area and types of construction. The building area and type of construction of covered mall or open mall buildings, anchor buildings and parking garages shall comply with this section.

402.4.1.1 Covered and open mall buildings. The building area of any covered mall or open mall building shall not be limited provided that the covered mall or open mall building does not exceed three floor levels at any point nor three stories above grade plane, and is of Type I, II, III or IV construction.

402.4.1.2 Anchor buildings. The building area and building height of any anchor building shall be based on the type of construction as required by Section 503 as modified by Sections 504 and 506.

Exception: The building area of any anchor building shall not be limited provided that the anchor building is not more than three stories above grade plane, and is of Type I, II, III or IV construction.

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402.4.1.3 Parking garage. The building area and building height of any parking garage shall be based on the type of construction as required by Sections 406.5 and 406.6, respectively.

402.4.2 Fire-resistance-rated separation. Fire-resistance-rated separation is not required between tenant spaces and the mall. Fire-resistance-rated separation is not required between a food court and adjacent tenant spaces or the mall.

402.4.2.1 Tenant separations. Each tenant space shall be separated from other tenant spaces by a fire partition complying with Section 708. A tenant separation wall is not required between any tenant space and the mall.

402.4.2.2 Anchor building separation. An anchor building shall be separated from the covered or open mall building by fire walls complying with Section 706.

Exceptions:

1. Anchor buildings of not more than three stories above grade plane that have an occupancy classification the same as that permitted for tenants of the mall building shall be separated by 2-hour fire-resistance-rated fire barriers complying with Section 707.
2. The exterior walls of anchor buildings separated from an open mall building by an open mall shall comply with Table 705.5.

402.4.2.2.1 Openings between anchor building and mall. Except for the separation between Group R-1 sleeping units and the mall, openings between anchor buildings of Type IA, IB, IIA or IIB construction and the mall need not be protected.

402.4.2.3 Parking garages. An attached garage for the storage of passenger vehicles having a capacity of not more than nine persons and open parking garages shall be considered as a separate building where it is separated from the covered or open mall building or anchor building by not less than 2-hour fire barriers constructed in accordance with Section 707 or horizontal assemblies constructed in accordance with Section 711, or both.

Parking garages, which are separated from covered mall buildings, open mall buildings or anchor buildings, shall comply with the provisions of Table 705.5.

Pedestrian walkways and tunnels that connect garages to mall buildings or anchor buildings shall be constructed in accordance with Section 3104.

402.4.3 Open mall construction. Floor assemblies in, and roof assemblies over, the open mall of an open mall building shall be open to the atmosphere for not less than 20 feet (6096 mm), measured perpendicular from the face of the tenant spaces on the lowest level, from edge of balcony to edge of balcony on upper floors and from edge of roof line to edge of roof line. The openings within, or the unroofed area of, an open mall shall extend from the lowest/grade level of the open mall through the entire roof assembly. Balconies on upper levels of the mall shall not project into the required width of the opening.

402.4.3.1 Pedestrian walkways. Pedestrian walkways connecting balconies in an open mall shall be located not less than 20 feet (6096 mm) from any other pedestrian walkway.

[F] 402.5 Automatic sprinkler system. Covered and open mall buildings and buildings connected shall be equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1, which shall comply with all of the following:

1. The automatic sprinkler system shall be complete and operative throughout occupied space in the mall building prior to occupancy of any of the tenant spaces. Unoccupied tenant spaces shall be similarly protected unless provided with approved alternative protection.
2. Sprinkler protection for the mall of a covered mall building shall be independent from that provided for tenant spaces or anchor buildings.
3. Sprinkler protection for the tenant spaces of an open mall building shall be independent from that provided for anchor buildings.
4. Sprinkler protection shall be provided beneath exterior circulation balconies located adjacent to an open mall.
5. Where tenant spaces are supplied by the same system, they shall be independently controlled.

Exception: An automatic sprinkler system shall not be required in spaces or areas of open parking garages separated from the covered or open mall building in accordance with Section 402.4.2.3 and constructed in accordance with Section 406.5.

402.6 Interior finishes and features. Interior finishes within the mall and installations within the mall shall comply with Sections 402.6.1 through 402.6.4.

402.6.1 Interior finish Interior wall and ceiling finishes within the mall of a covered mall building and within the exits of covered or open mall buildings shall have a minimum flame spread index and smoke-developed index of Class B in accordance with Chapter 8. Interior floor finishes shall meet the requirements of Section 804.

402.6.2 Kiosks. Kiosks and similar structures (temporary or permanent) located within the mall of a covered mall building or within the perimeter line of an open mall building shall meet the following requirements:

1. Combustible kiosks or other structures shall not be located within a covered or open mall unless constructed of any of the following materials:
    1.1. Fire-retardant-treated wood complying with Section 2303.2.

1.2. Foam plastics having a maximum heat release rate not greater than 100 kW (105 Btu/h) when tested in accordance with the exhibit booth protocol in UL 1975 or when tested in accordance with NFPA 289 using the 20 kW ignition source.

1.3. Aluminum composite material (ACM) meeting the requirements of Class A interior finish in accordance with Chapter 8 when tested as an assembly in the maximum thickness intended.

2. Kiosks or similar structures located within the mall shall be provided with approved automatic sprinkler system and detection devices.

3. The horizontal separation between kiosks or groupings thereof and other structures within the mall shall be not less than 20 feet (6096 mm).

4. Each kiosk or similar structure or groupings thereof shall have an area not greater than 300 square feet (28 m^2).

402.6.3 Play structures. Play structures located within a mall building or within the perimeter line of an open mall building shall comply with Section 424. The horizontal separation between play structures, kiosks and similar structures within the mall shall be not less than 20 feet (6096 mm).

402.6.4 Plastic signs. Plastic signs affixed to the storefront of any tenant space facing a mall or open mall shall be limited as specified in Sections 402.6.4.1 through 402.6.4.5.

402.6.4.1 Area. Plastic signs shall be not more than 20 percent of the wall area facing the mall.

402.6.4.2 Height and width. Plastic signs shall be not greater than 36 inches (914 mm) in height, except that where the sign is vertical, the height shall be not greater than 96 inches (2438 mm) and the width shall be not greater than 36 inches (914 mm).

402.6.4.3 Location. Plastic signs shall be located not less than 18 inches (457 mm) from adjacent tenants.

402.6.4.4 Plastics other than foam plastics. Plastics other than foam plastics used in signs shall be light-transmitting plastics complying with Section 2606.4 or shall have a self-ignition temperature of 650°F (343°C) or greater when tested in accordance with ASTM D1929, and a flame spread index not greater than 75 and smoke-developed index not greater than 450 when tested in the manner intended for use in accordance with ASTM E84 or UL 723 or meet the acceptance criteria of Section 803.1.1.1 when tested in accordance with NFPA 286.

402.6.4.4.1 Encasement. Edges and backs of plastic signs in the mall shall be fully encased in metal.

402.6.4.5 Foam plastics. Foam plastics used in signs shall have flame-retardant characteristics such that the sign has a maximum heat-release rate of 150 kilowatts when tested in accordance with UL 1975 or when tested in accordance with NFPA 289 using the 20 kW ignition source, and the foam plastics shall have the physical characteristics specified in this section. Foam plastics used in signs installed in accordance with Section 402.6.4 shall not be required to comply with the flame spread and smoke-developed indices specified in Section 2603.3.

402.6.4.5.1 Density. The density of foam plastics used in signs shall be not less than 20 pounds per cubic foot (pcf) (320 kg/ m^3).

402.6.4.5.2 Thickness. The thickness of foam plastic signs shall not be greater than $^1/_2$ inch (12.7 mm).

[F] 402.7 Emergency systems. Covered and open mall buildings, anchor buildings and associated parking garages shall be provided with emergency systems complying with Sections 402.7.1 through 402.7.5.

[F] 402.7.1 Standpipe system. Covered and open mall buildings shall be equipped throughout with a standpipe system as required by Section 905.3.3.

[F] 402.7.2 Smoke control. Atriums connecting three or more stories in a covered mall building shall be provided with a smoke control system in accordance with Section 909.

[F] 402.7.3 Emergency power. Covered mall buildings greater than 50,000 square feet (4645 m^2) in area and open mall buildings greater than 50,000 square feet (4645 m^2) within the established perimeter line shall be provided with emergency power that is capable of operating the emergency voice/alarm communication system in accordance with Section 2702.

[F] 402.7.4 Emergency voice/alarm communication system. Where the total floor area is greater than 50,000 square feet (4645 m^2) within either a covered mall building or within the perimeter line of an open mall building, an emergency voice/alarm communication system shall be provided.

The fire department shall have access to any emergency voice/alarm communication systems serving a mall, required or otherwise. The systems shall be provided in accordance with Section 907.5.2.2.

[F] 402.7.5 Fire department access to equipment. Rooms or areas containing controls for air-conditioning systems or fire protection systems shall be identified for use by the fire department.

[BE] 402.8 Means of egress. Covered mall buildings, open mall buildings and each tenant space within a mall building shall be provided with means of egress as required by this section and this code. Where there is a conflict between the requirements of this code and the requirements of Sections 402.8.1 through 402.8.8, the requirements of Sections 402.8.1 through 402.8.8 shall apply.

[BE] 402.8.1 Mall width. For the purpose of providing required egress, malls are permitted to be considered as corridors but need not comply with the requirements of Section 1005.1 of this code where the width of the mall is as specified in this section.

[BE] 402.8.1.1 Minimum width. The aggregate clear egress width of the mall in either a covered or open mall building shall be not less than 20 feet (6096 mm). The mall width shall be sufficient to accommodate the occupant load served. Any portion of the minimum required aggregate egress width shall be not less than 10 feet (3048 mm) measured to a height of 8 feet (2438

mm) between any projection of a tenant space bordering the mall and the nearest kiosk, vending machine, bench, display opening, food court or other obstruction to means of egress travel.

[BE] 402.8.2 Determination of occupant load. The occupant load permitted in any individual tenant space in a covered or open mall building shall be determined as required by this code. Means of egress requirements for individual tenant spaces shall be based on the occupant load thus determined.

[BE] 402.8.2.1 Occupant formula. In determining required means of egress of the mall, the number of occupants for whom means of egress are to be provided shall be based on gross leasable area of the covered or open mall building (excluding anchor buildings) and the occupant load factor as determined by Equation 4-1.

Equation 4-1 $OLF = (0.00007)(GLA) + 25$

where:

OLF = The occupant load factor (square feet per person).

GLA = The *gross leasable area* (square feet).

Exception: Tenant spaces attached to a covered or open mall building but with a means of egress system that is totally independent of the open mall of an open mall building or of a covered mall building shall not be considered as gross leasable area for determining the required means of egress for the mall building.

[BE] 402.8.2.2 OLF range. The occupant load factor (OLF) is not required to be less than 30 and shall not exceed 50.

[BE] 402.8.2.3 Anchor buildings. The occupant load of anchor buildings opening into the mall shall not be included in computing the total number of occupants for the mall.

[BE] 402.8.2.4 Food courts. The occupant load of a food court shall be determined in accordance with Section 1004. For the purposes of determining the means of egress requirements for the mall, the food court occupant load shall be added to the occupant load of the covered or open mall building as calculated in Section 402.8.2.1.

[BE] 402.8.3 Number of means of egress. Wherever the distance of travel to the mall from any location within a tenant space used by persons other than employees is greater than 75 feet (22 860 mm) or the tenant space has an occupant load of 50 or more, not fewer than two means of egress shall be provided.

[BE] 402.8.4 Arrangements of means of egress. Assembly occupancies with an occupant load of 500 or more located within a covered mall building shall be so located such that their entrance will be immediately adjacent to a principal entrance to the mall and shall have not less than one-half of their required means of egress opening directly to the exterior of the covered mall building. Assembly occupancies located within the perimeter line of an open mall building shall be permitted to have their main exit open to the open mall.

[BE] 402.8.4.1 Anchor building means of egress. Required means of egress for anchor buildings shall be provided independently from the mall means of egress system. The occupant load of anchor buildings opening into the mall shall not be included in determining means of egress requirements for the mall. The path of egress travel of malls shall not exit through anchor buildings. Malls terminating at an anchor building where other means of egress has not been provided shall be considered as a dead-end mall.

[BE] 402.8.5 Distance to exits. Within each individual tenant space in a covered or open mall building, the distance of travel from any point to an exit or entrance to the mall shall be not greater than 200 feet (60 960 mm).

The distance of travel from any point within a mall of a covered mall building to an exit shall be not greater than 200 feet (60 960 mm). The maximum distance of travel from any point within an open mall to an exit or to the perimeter line of the open mall building shall be not greater than 200 feet (60 960 mm).

[BE] 402.8.6 Access to exits. Where more than one exit is required, they shall be so arranged that it is possible to travel in either direction from any point in a mall of a covered mall building to separate exits or from any point in an open mall of an open mall building to two separate locations on the perimeter line, provided that neither location is an exterior wall of an anchor building or parking garage. The width of an exit passageway or corridor from a mall shall be not less than 66 inches (1676 mm).

Exception: Access to exits is permitted by way of a dead-end mall that does not exceed a length equal to twice the width of the mall measured at the narrowest location within the dead-end portion of the mall.

[BE] 402.8.6.1 Exit passageways. Where exit passageways provide a secondary means of egress from a tenant space, the exit passageways shall be constructed in accordance with Section 1024.

[BE] 402.8.7 Service areas fronting on exit passageways. Mechanical rooms, electrical rooms, building service areas and service elevators are permitted to open directly into exit passageways, provided that the exit passageway is separated from such rooms with not less than 1-hour fire barriers constructed in accordance with Section 707 or horizontal assemblies constructed in accordance with Section 711, or both. The fire protection rating of openings in the fire barriers shall be not less than 1 hour.

[BE] 402.8.8 Security grilles and doors. Horizontal sliding or vertical security grilles or doors that are a part of a required means of egress shall conform to the following:

1. Doors and grilles shall remain in the full open position during the period of occupancy by the general public.
2. Doors or grilles shall not be brought to the closed position when there are 10 or more persons occupying spaces served by a single exit or 50 or more persons occupying spaces served by more than one exit.

3. The doors or grilles shall be openable from within without the use of any special knowledge or effort where the space is occupied.
4. Where two or more exits are required, not more than one-half of the exits shall be permitted to include either a horizontal sliding or vertical rolling grille or door.

SECTION 403—HIGH-RISE BUILDINGS *AND GROUP I-2 OCCUPANCIES HAVING OCCUPIED FLOORS LOCATED MORE THAN 75 FEET ABOVE THE LOWEST LEVEL OF FIRE DEPARTMENT VEHICLE ACCESS*

403.1 Applicability. *New high-rise buildings (see Section 202 for definition of a high-rise) and new Group I-2 occupancies having occupied floors located more than 75 feet above the lowest level of fire department vehicle access* shall comply with Sections 403.2 through *403.7.*

Exceptions: The provisions of Sections 403.2 through *403.7* shall not apply to the following buildings and structures:

1. Airport traffic control towers in accordance with Section 412.2.
2. Open parking garages in accordance with Section 406.5.
3. The portion of a building containing a Group A-5 occupancy in accordance with Section 303.6.
4. Special industrial occupancies in accordance with Section 503.1.1.
5. *Buildings such as power plants, lookout towers, steeples, grain houses and similar structures with noncontinuous human occupancy, when so determined by the enforcing agency.*

For existing high-rise buildings and for existing Group R occupancies, see California Fire Code Chapter 11 and California Existing Building Code.

For the purpose of this section, in determining the level from which the highest occupied floor is to be measured, the enforcing agency should exercise reasonable judgment, including consideration of overall accessibility to the building by fire department personnel and vehicular equipment. When a building is located on sloping terrain and there is building access on more than one level, the enforcing agency may select the level that provides the most logical and adequate fire department access.

403.2 Construction. The construction of high-rise buildings shall comply with the provisions of Sections 403.2.1 through 403.2.3.

403.2.1 Reduction in fire-resistance rating. The fire-resistance rating reductions specified in Sections 403.2.1.1 and 403.2.1.2 shall be allowed in buildings that have sprinkler control valves equipped with supervisory initiating devices and water-flow initiating devices for each floor.

Exception: *Buildings, or portions of buildings, classified as a Group H-1, H-2 or H-3 occupancy.*

403.2.1.1 Type of construction. The following reductions in the minimum fire-resistance rating of the building elements in Table 601 shall be permitted as follows:

1. For buildings not greater than 420 feet (128 m) in building height, the fire-resistance rating of the building elements in Type IA construction shall be permitted to be reduced to the minimum fire-resistance ratings for the building elements in Type IB.

   Exception: The required fire-resistance rating of *the primary structural frame* shall not be reduced.
2. In other than Group F-1, H-2, H-3, H-5, M and S-1 occupancies, the fire-resistance rating of the building elements in Type IB construction shall be permitted to be reduced to the fire-resistance ratings in Type IIA.

   Exception: *The required fire-resistance rating of the primary structural frame shall not be permitted to be reduced.*
3. The building height and building area limitations of a building containing building elements with reduced fire-resistance ratings shall be permitted to be the same as the building without such reductions.

403.2.1.2 Shaft enclosures. For buildings not greater than 420 feet (128 m) in building height, the required fire-resistance rating of the fire barriers enclosing vertical shafts, other than interior exit stairway and elevator hoistway enclosures, is permitted to be reduced to 1 hour where automatic sprinklers are installed within the shafts at the top and at alternate floor levels.

[BS] 403.2.2 Structural integrity of interior exit stairways and elevator hoistway enclosures. For high-rise buildings of Risk Category III or IV in accordance with Section 1604.5, and for all buildings that are more than 420 feet (128 m) in building height, enclosures for interior exit stairways and elevator hoistway enclosures shall comply with Sections 403.2.2.1 through 403.2.2.4.

[BS] 403.2.2.1 Wall assembly materials. Where an interior exit stairway enclosure or an elevator hoistway enclosure is constructed as an interior wall of the building, the panels applied to the exterior of the enclosure shall be in accordance with one of the following:

1. The wall assembly shall incorporate not fewer than two layers of impact-resistant panels, each of which meets or exceeds Soft Body Impact Classification Level 2 and Hard Body Impact Classification Level 2 as measured by the test method described in ASTM C1629/C1629M.
2. The wall assembly shall incorporate not fewer than one layer of impact-resistant panels that meet or exceed Soft Body Impact Classification Level 2 and Hard Body Impact Classification Level 3 as measured by the test method described in ASTM C1629/C1629M.
3. The wall assembly incorporates multiple layers of any material, tested in tandem, that meets or exceeds Soft Body Impact Classification Level 2 and Hard Body Impact Classification Level 3 as measured by the test method described in ASTM C1629/C1629M.

[BS] 403.2.2.2 Concrete and masonry walls. Concrete or masonry walls shall be deemed to satisfy the requirements of Section 403.2.2.1.

[BS] 403.2.2.3 Other wall assemblies. Any other wall assembly that provides impact resistance equivalent to that required by Section 403.2.2.1 for Soft Body Impact Classification Level 2 and for Hard Body Impact Classification Level 3, as measured by the test method described in ASTM C1629/C1629M, shall be permitted.

[BS] 403.2.2.4 Glass walls. Glass walls complying with the safety glazing impact requirements of CPSC 16 CFR 1201, Cat. II or ANSI Z97.1, Class A shall be deemed to satisfy the requirements of Section 403.2.2.1.

[BF] 403.2.3 Sprayed fire-resistive materials (SFRM). The bond strength of the sprayed fire-resistive materials (SFRM) installed throughout the building shall be in accordance with Table 403.2.3.

TABLE 403.2.3—MINIMUM BOND STRENGTH

HEIGHT OF BUILDING[a]	SFRM MINIMUM BOND STRENGTH
Up to 420 feet	430 psf
Greater than 420 feet	1,000 psf

For SI: 1 foot = 304.8 mm, 1 pound per square foot (psf) = 0.0479 kW/m^2.
a. Above the lowest level of fire department vehicle access.

[F] 403.3 Automatic sprinkler system. Buildings and structures shall be equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 and a secondary water supply where required by Section 403.3.3. *A sprinkler water-flow alarm-initiating device and a control valve with a supervisory signal-initiating device shall be provided at the lateral connection to the riser for each floor.*

Exception: An automatic sprinkler system shall not be required in spaces or areas of telecommunications equipment buildings used exclusively for telecommunications equipment, associated electrical power distribution equipment, batteries and standby engines, provided that those spaces or areas are equipped throughout with an automatic fire detection system in accordance with Section 907.2 and are separated from the remainder of the building by not less than 1-hour fire barriers constructed in accordance with Section 707 or not less than 2-hour horizontal assemblies constructed in accordance with Section 711, or both.

[F] 403.3.1 Number of sprinkler *system* risers and system design. The number of sprinkler risers and system design shall comply with Section 403.3.1.1 or 403.3.1.2, based on building height.

[F] 403.3.1.1 Buildings 420 feet or less in height. In buildings 420 feet (128 m) or less in height, sprinkler systems shall be supplied by a single standpipe or sprinkler express riser within each vertical water supply zone.

[F] 403.3.1.2 Buildings more than 420 feet in height. In buildings more than 420 feet (128 m) in height, not fewer than two standpipes or sprinkler express risers *or combination standpipe system risers* shall supply automatic sprinkler systems within each vertical water supply zone *and located in separate shafts*. Each standpipe or sprinkler express riser *or combination standpipe system riser* shall supply automatic sprinkler systems on alternating floors within the vertical water supply zone such that two adjacent floors are not supplied from the same riser. *Each sprinkler system shall be hydraulically designed so that when one connection is shut down, the other connection shall be capable of supplying the sprinkler system design demand.*

[F] 403.3.1.3 Riser location. Standpipes or sprinkler express risers shall be placed in interior exit stairways and ramps that are remotely located in accordance with Section 1007.1.

[F] 403.3.2 Water supply to required fire pumps. In all buildings *having an occupied floor* that *is* more than *120* feet (*36 576 mm*) *above the lowest level of fire department vehicle access,* in building height and buildings of Type IV-A and IV-B construction that are more than 120 feet (36 576 mm) in building height, required fire pumps shall be supplied by connections to not fewer than two water mains located in different streets. Separate supply piping shall be provided between each connection to the water main and the pumps. Each connection and the supply piping between the connection and the pumps shall be sized to supply the flow and pressure required for the pumps to operate.

Exception: Two connections to the same main shall be permitted provided that the main is valved such that an interruption can be isolated so that the water supply will continue without interruption through not fewer than one of the connections.

403.3.2.1 Fire pumps. *Redundant fire pump systems shall be required for high-rise buildings having an occupied floor more than 200 feet above the lowest level of fire department vehicle access. Each fire pump system shall be capable of automatically supplying the required demand for the automatic sprinkler and standpipe systems.*

[F] 403.3.3 Secondary water supply. An automatic secondary on-site water supply having a *usable* capacity *of* not less than the hydraulically calculated sprinkler demand, including the hose stream requirement in accordance with Section 903.3.1.1, shall be provided for high-rise buildings *and Group I-2 occupancies having occupied floors located more than 75 ft above the lowest level of fire department vehicle access* assigned to Seismic Design Category C, D, E or F as determined by Section 1613. An additional fire pump shall not be required for the secondary water supply unless needed to provide the minimum design intake pressure at the suction side of the fire pump supplying the automatic sprinkler system. The secondary water supply shall have a duration of not less than 30 minutes as determined by the occupancy hazard classification in accordance with Section 903.3.1.1. *The Class I stand-*

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pipe system demand shall not be required to be included in the secondary on-site water supply calculations. In no case shall the secondary on-site water supply be less than 15,000 gallons.

[F] 403.3.4 Fire pump room. Fire pumps shall be located in rooms protected in accordance with Section 913.2.1.

403.3.5 Fire pumps. *See Section 913.6.*

[F] 403.4 Emergency systems. The detection, alarm and emergency systems of high-rise buildings shall comply with Sections 403.4.1 through 403.4.8.

[F] 403.4.1 Smoke detection. Smoke detection shall be provided in accordance with Section 907.2.13.1.

[F] 403.4.2 Fire alarm system. A fire alarm system shall be provided in accordance with Section 907.2.13.

[F] 403.4.3 Standpipe system. A high-rise building shall be equipped with a standpipe system as required by Section 905.3.

[F] 403.4.4 Emergency voice/alarm communication system. An emergency voice/alarm communication system shall be provided in accordance with Section 907.5.2.2.

[F] 403.4.5 Emergency communication coverage. In-building, two-way emergency responder communication coverage shall be provided in accordance with Section 510 of the *California Fire Code.*

[F] 403.4.6 Fire command. A fire command center complying with Section 911 shall be provided in a location approved by the fire code official.

403.4.7 ***Smoke control system.*** *All portions of high-rise buildings shall be provided with a smoke control system in accordance with Section 909.*

[F] 403.4.8 Standby and emergency power. A standby power system complying with Section 2702 and Section 3003 shall be provided for the standby power loads specified in Section 403.4.8.3. An emergency power system complying with Section 2702 shall be provided for the emergency power loads specified in Section 403.4.8.4.

[F] 403.4.8.1 Equipment room. If the standby or emergency power system includes a generator set inside a building, the system shall be located in a separate room enclosed with 2-hour fire barriers constructed in accordance with Section 707 or horizontal assemblies constructed in accordance with Section 711, or both. System supervision with manual start and transfer features shall be provided at the fire command center.

Exception: In Group I-2, manual start and transfer features for the critical branch of the emergency power are not required to be provided at the fire command center. ⬅

[F] 403.4.8.2 Fuel line piping protection. Fuel lines supplying a generator set inside a building shall be separated from areas of the building other than the room the generator is located in by one of the following methods:

1. A fire-resistant pipe-protection system that has been tested in accordance with UL 1489. The system shall be installed as tested and in accordance with the manufacturer's installation instructions, and shall have a rating of not less than 2 hours. Where the building is protected throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1, the required rating shall be reduced to 1 hour.
2. An assembly that has a fire-resistance rating of not less than 2 hours. Where the building is protected throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2, the required fire-resistance rating shall be reduced to 1 hour.
3. Other approved methods.

[F] 403.4.8.3 Standby power loads. The following are classified as standby power loads:

1. Ventilation and automatic fire detection equipment for smokeproof enclosures.
2. Elevators.
3. Where elevators are provided in a high-rise building for accessible means of egress, fire service access or occupant self-evacuation, the standby power system shall also comply with Sections 1009.4, 3007 or 3008, as applicable.

[F] 403.4.8.4 Emergency power loads. The following are classified as emergency power loads:

1. Exit signs and means of egress illumination required by Chapter 10.
2. Elevator car lighting.
3. Emergency voice/alarm communications systems.
4. Automatic fire detection systems.
5. Fire alarm systems.
6. Electrically powered fire pumps.
7. Power and lighting for the fire command center required by Section 403.4.6.

[BE] 403.5 Means of egress and evacuation. The means of egress in high-rise buildings shall comply with Sections 403.5.1 through 403.5.5.

[BE] 403.5.1 Remoteness of interior exit stairways. Required interior exit stairways shall be separated by a distance not less than 30 feet (9144 mm) or not less than one-fourth of the length of the maximum overall diagonal dimension of the building or area to be served, whichever is less. The distance shall be measured in a straight line between the nearest points of the enclosure surrounding the interior exit stairways. In buildings with three or more interior exit stairways, not fewer than two of the interior exit stairways shall comply with this section. Interlocking or scissor stairways shall be counted as one interior exit stairway.

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[BE] 403.5.2 Additional interior exit stairway. For buildings other than Group R-2 and their ancillary spaces that are more than 420 feet (128 m) in building height, one additional interior exit stairway meeting the requirements of Sections 1011 and 1023 shall be provided in addition to the minimum number of exits required by Section 1006.3. The total capacity of any combination of remaining interior exit stairways with one interior exit stairway removed shall be not less than the total capacity required by Section 1005.1. Scissor stairways shall not be considered the additional interior exit stairway required by this section.

Exceptions:

1. An additional interior exit stairway shall not be required to be installed in buildings having elevators used for occupant self-evacuation in accordance with Section 3008.
2. An additional interior exit stairway shall not be required for other portions of the building where the highest occupiable floor level in those areas is less than 420 feet (128 m) in building height.

[BE] 403.5.3 Stairway door operation. Stairway doors other than the exit discharge doors shall be permitted to be locked from the stairway side. Stairway doors that are locked from the stairway side shall be capable of being unlocked without unlatching where any of the following conditions occur:

1. Individually or simultaneously upon a signal from the fire command center.
2. Simultaneously upon activation of a fire alarm signal in an area served by the stairway.
3. Upon failure of the power supply to the lock or the locking system.

[BE] 403.5.3.1 Stairway communication system. A telephone or other two-way communications system connected to an approved constantly attended station shall be provided at not less than every fifth floor in each stairway where the doors to the stairway are locked. Systems shall be listed in accordance with UL 2525 and installed in accordance with NFPA 72.

[BE] 403.5.4 Smokeproof enclosures. *Every exit enclosure in high-rise buildings shall comply with Sections 909.20 and 1023.12.* Every required interior exit stairway *in Group I-2 occupancies* serving floors more than 75 feet (22 860 mm) above the lowest level of fire department vehicle access shall be a smokeproof enclosure in accordance with Sections 909.20 and 1023.12.

Exception: *In high-rise buildings, exit enclosures serving three or less adjacent floors where one of the adjacent floors is the level of exit discharge.*

[BE] 403.5.5 Luminous egress path markings. Luminous egress path markings shall be provided in accordance with Section 1025.

403.6 Elevators. Elevator installation and operation in high-rise buildings shall comply with Chapter 30 and Sections 403.6.1 and 403.6.2.

Enclosed elevator lobbies shall be provided in accordance with Section 3006. Exceptions 2. 3, 4 and 5 of 3006.3 shall only be permitted where approved by the Fire Chief in accordance with Section 1.11.2.1.1 or in accordance with Section 1.11.2.1.2 for all state-owned buildings, state-occupied buildings and state institutions throughout the state.

403.6.1 Fire service access elevator. In buildings with an occupied floor more than 120 feet (36 576 mm) above the lowest level of fire department vehicle access, not fewer than two fire service access elevators, or all elevators, whichever is less, shall be provided in accordance with Section 3007. Each fire service access elevator shall have a capacity of not less than 3,500 pounds (1588 kg) and shall comply with Section 3002.4.

403.6.2 Occupant evacuation elevators. Where installed in accordance with Section 3008, passenger elevators for general public use shall be permitted to be used for occupant self-evacuation.

403.7 Existing high-rise buildings. *For existing high-rise buildings, see California Fire Code Chapter 11 and California Existing Building Code.*

SECTION 404—ATRIUMS

404.1 General. The provisions of Sections 404.1 through *404.12* shall apply to buildings containing atriums. Atriums are not permitted in buildings or structures classified as Group H.

Exception: Vertical openings that comply with Sections 712.1.1 through 712.1.3, and Sections 712.1.9 through 712.1.14.

404.2 Use. The floor of the atrium shall not be used for other than low fire hazard uses and only approved materials and decorations in accordance with the *California Fire Code* shall be used in the atrium space.

Exception: The atrium floor area is permitted to be used for any approved use where the individual space is provided with an automatic sprinkler system in accordance with Section 903.3.1.1.

[F] 404.3 Automatic sprinkler protection. An approved automatic sprinkler system shall be installed throughout the entire building.

Exceptions:

1. That area of a building adjacent to or above the atrium need not be sprinklered provided that portion of the building is separated from the atrium portion by not less than 2-hour fire barriers constructed in accordance with Section 707 or horizontal assemblies constructed in accordance with Section 711, or both.
2. Where the ceiling of the atrium is more than 55 feet (16 764 mm) above the floor, sprinkler protection at the ceiling of the atrium is not required.

[F] 404.4 Fire alarm system. A fire alarm system shall be provided in accordance with Section 907.2.14.

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404.5 Smoke control. A smoke control system shall be installed in accordance with Section 909.

Exceptions:

1. In other than Group I-2 *and R-2.1*, smoke control is not required for atriums that connect only two stories.
2. A smoke control system is not required for atriums connecting more than two stories when all of the following are met:
   2.1. Only the two lowest stories shall be permitted to be open to the atrium.
   2.2. All stories above the lowest two stories shall be separated from the atrium in accordance with the provisions for a shaft in Section 713.4.

404.6 Enclosure of atriums. Atrium spaces shall be separated from adjacent spaces by a 1-hour fire barrier constructed in accordance with Section 707 or a horizontal assembly constructed in accordance with Section 711, or both.

Exceptions:

1. A fire barrier is not required where a glass wall forming a smoke partition is provided. The glass wall shall comply with all of the following:
   1.1. Automatic sprinklers are provided along both sides of the separation wall and doors, or on the room side only if there is not a walkway on the atrium side. The sprinklers shall be located between 4 inches and 12 inches (102 mm and 305 mm) away from the glass and at intervals along the glass not greater than 6 feet (1829 mm). The sprinkler system shall be designed so that the entire surface of the glass is wet upon activation of the sprinkler system without obstruction.
   1.2. The glass wall shall be installed in a gasketed frame in a manner that the framing system deflects without breaking (loading) the glass before the sprinkler system operates.
   1.3. Where glass doors are provided in the glass wall, they shall be either self-closing or automatic-closing.
2. A fire barrier is not required where a glass-block wall assembly complying with Section 2110 and having a $^{3}/_{4}$-hour fire protection rating is provided.
3. *In other than Group I and R-2.1 occupancies,* a fire barrier is not required between the atrium and the adjoining spaces of up to three floors of the atrium provided that such spaces are accounted for in the design of the smoke control system.
4. In other than *Group I* and *R-2.1 occupancies*, a fire barrier is not required between the atrium and the adjoining spaces where the atrium is not required to be provided with a smoke control system.
5. In Group I-2 and *R-2.1 occupancies*, a fire barrier is not required between the atrium and the adjoining spaces, other than care recipient sleeping or treatment rooms, for up to three stories of the atrium provided that such spaces are accounted for in the design of the smoke control system and do not provide access to care recipient sleeping or treatment rooms.
6. A horizontal assembly is not required between the atrium and openings for escalators complying with Section 712.1.3.
7. A horizontal assembly is not required between the atrium and openings for exit access stairways and ramps complying with Item 4 of Section 1019.3.

[F] 404.7 Standby power. Equipment required to provide smoke control shall be provided with standby power in accordance with Section 909.11.

404.8 Interior finish. The interior finish of walls and ceilings of the atrium shall be not less than Class B. Sprinkler protection shall not result in a reduction in class.

[BE] 404.9 Exit access travel distance. Exit access travel distance for areas open to an atrium shall comply with the requirements of Section 1017.

[BE] 404.10 Exit stairways in an atrium. Where an atrium contains an interior exit stairway all the following shall be met:

1. The entry to the exit stairway is the edge of the closest riser of the exit stairway.
2. The entry of the exit stairway shall have access from a minimum of two directions.
3. The distance between the entry to an exit stairway in an atrium and the entrance to a minimum of one exit stairway enclosed in accordance with Section 1023.2 shall comply with the separation required by Section 1007.1.1.
4. Exit access travel distance shall be measured to the closest riser of the exit stairway.
5. Not more than 50 percent of the exit stairways shall be located in the same atrium.
6. The discharge from the exit stairway at the level of exit discharge shall comply with Section 1028.1.

[BE] 404.11 Interior exit stairway discharge. Discharge of interior exit stairways through an atrium shall be in accordance with Section 1028.

404.12 Group I and R-2.1 occupancy means of egress. *Required means of egress from sleeping and treatment rooms in Group I and R-2.1 occupancies shall not pass through the atrium.*

SECTION 405—UNDERGROUND BUILDINGS

405.1 General. The provisions of Sections 405.2 through 405.9 apply to building spaces having a floor level used for human occupancy more than 30 feet (9144 mm) below the finished floor of the lowest level of exit discharge.

Exceptions: The provisions of Section 405 are not applicable to the following buildings or portions of buildings:

1. One- and two-family dwellings, sprinklered in accordance with Section 903.3.1.3.

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2. Parking garages provided with automatic sprinkler systems in compliance with Section 405.3.
3. Fixed guideway transit systems.
4. Grandstands, bleachers, stadiums, arenas and similar facilities.
5. Where the lowest story is the only story that would qualify the building as an underground building and has an area not greater than 1,500 square feet (139 m^2) and has an occupant load less than 10.
6. Pumping stations and other similar mechanical spaces intended only for limited periodic use by service or maintenance personnel.

405.2 Construction requirements. The underground portion of the building shall be of Type I construction.

[F] 405.3 Automatic sprinkler system. The highest level of exit discharge serving the underground portions of the building and all levels below shall be equipped with an automatic sprinkler system installed in accordance with Section 903.3.1.1. Water-flow switches and control valves shall be supervised in accordance with Section 903.4.

405.4 Compartmentation. Compartmentation shall be in accordance with Sections 405.4.1 through 405.4.3.

405.4.1 Number of compartments. A building having a floor level more than 60 feet (18 288 mm) below the finished floor of the lowest level of exit discharge shall be divided into not fewer than two compartments of approximately equal size. Such compartmentation shall extend through the highest level of exit discharge serving the underground portions of the building and all levels below.

Exception: The lowest story need not be compartmented where the area is not greater than 1,500 square feet (139 m^2) and has an occupant load of less than 10.

405.4.2 Smoke barrier penetration. The compartments shall be separated from each other by a smoke barrier in accordance with Section 709. Penetrations between the two compartments shall be limited to plumbing and electrical piping and conduit that are firestopped in accordance with Section 714. Doorways shall be protected by fire door assemblies that comply with Section 716, automatic-closing by smoke detection in accordance with Section 716.2.6.6 and installed in accordance with NFPA 105 and Section 716.2.2.1. Where provided, each compartment shall have an air supply and an exhaust system independent of the other compartments.

405.4.3 Elevators. Where elevators are provided, each compartment shall have direct access to an elevator. Where an elevator serves more than one compartment, an enclosed elevator lobby shall be provided and shall be separated from each compartment by a smoke barrier in accordance with Section 709. Doorways in the smoke barrier shall be protected by fire door assemblies that comply with Section 716, shall comply with the smoke and draft control assembly requirements of Section 716.2.2.1 with the UL 1784 test conducted without an artificial bottom seal, and shall be automatic-closing by smoke detection in accordance with Section 716.2.6.6.

405.5 Smoke control system. A smoke control system shall be provided in accordance with Sections 405.5.1 and 405.5.2.

405.5.1 Control system. A smoke control system is required to control the migration of products of combustion in accordance with Section 909 and the provisions of this section. Smoke control shall restrict movement of smoke to the general area of fire origin and maintain means of egress in a usable condition.

405.5.2 Compartment smoke control system. Where compartmentation is required, each compartment shall have an independent smoke control system. The system shall be automatically activated and capable of manual operation in accordance with Sections 907.2.18 and 907.2.19.

[F] 405.6 Fire alarm systems. A fire alarm system shall be provided where required by Sections 907.2.18 and 907.2.19.

[BE] 405.7 Means of egress. Means of egress shall be in accordance with Sections 405.7.1 and 405.7.2.

[BE] 405.7.1 Number of exits. Each floor level shall be provided with not fewer than two exits. Where compartmentation is required by Section 405.4, each compartment shall have not fewer than one exit and not fewer than one exit access doorway into the adjoining compartment.

[BE] 405.7.2 Smokeproof enclosure. Every required stairway serving floor levels more than 30 feet (9144 mm) below the finished floor of its level of exit discharge shall comply with the requirements for a smokeproof enclosure as provided in Section 1023.12.

[F] 405.8 Standby and emergency power. A standby power system complying with Section 2702 shall be provided for the standby power loads specified in Section 405.8.1. An emergency power system complying with Section 2702 shall be provided for the emergency power loads specified in Section 405.8.2.

[F] 405.8.1 Standby power loads. The following are classified as standby power loads:

1. Smoke control system.
2. Ventilation and automatic fire detection equipment for smokeproof enclosures.
3. Elevators, as required in Section 3003.

[F] 405.8.2 Emergency power loads. The following are classified as emergency power loads:

1. Emergency voice/alarm communications systems.
2. Fire alarm systems.
3. Automatic fire detection systems.
4. Elevator car lighting.

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5. Means of egress and exit sign illumination as required by Chapter 10.
6. Fire pumps.

[F] 405.9 Standpipe system. The underground building shall be equipped throughout with a standpipe system in accordance with Section 905.

SECTION 406—MOTOR-VEHICLE-RELATED OCCUPANCIES

406.1 General. All motor-vehicle-related occupancies shall comply with Section 406.2. Private garages and carports shall also comply with Section 406.3. Open public parking garages shall also comply with Sections 406.4 and 406.5. Enclosed public parking garages shall also comply with Sections 406.4 and 406.6. Motor fuel-dispensing facilities shall also comply with Section 406.7. Repair garages shall also comply with Section 406.8.

406.2 Design. Private garages and carports, open and enclosed public parking garages, motor fuel-dispensing facilities and repair garages shall comply with Sections 406.2.1 through 406.2.9.

406.2.1 Automatic garage door operators and vehicular gates. Where provided, automatic garage door operators shall be listed and labeled in accordance with UL 325. Where provided, automatic vehicular gates shall comply with Section 3110. *See Health and Safety Code Sections 19890, 19891 and 19892 for additional provisions for residential garage door openers.*

406.2.2 Clear height. The clear height of each floor level in vehicle and pedestrian traffic areas shall be not less than 7 feet (2134 mm). Canopies under which fuels are dispensed shall have a clear height in accordance with Section 406.7.2. ***[DSA-AC, HCD 1-AC]*** *The clear height of vehicle and pedestrian areas required to be accessible shall comply with Chapter 11A or 11B, as applicable.*

Exception: A lower clear height is permitted for a parking tier in mechanical-access open parking garages where approved by the building official.

[BE] 406.2.3 Accessible parking spaces. Where parking is provided, accessible parking spaces, access aisles and vehicular routes serving accessible parking shall be provided in accordance with *Chapter 11A or Chapter 11B, as applicable.*

406.2.4 Floor surfaces. Floor surfaces shall be of concrete or similar approved noncombustible and nonabsorbent materials. The area of floor used for the parking of automobiles or other vehicles shall be sloped to facilitate the movement of liquids to a drain or toward the main vehicle entry doorway. The surface of vehicle fueling pads in motor fuel-dispensing facilities shall be in accordance with Section 406.7.1.

Exceptions:

1. Asphalt parking surfaces shall be permitted at ground level for public parking garages and private carports.
2. Slip-resistant, nonabsorbent, interior floor finishes having a critical radiant flux not more than 0.45 W/cm^2, as determined by ASTM E648 or NFPA 253, shall be permitted in repair garages.

406.2.5 Sleeping rooms. Openings between a motor vehicle-related occupancy and a room used for sleeping purposes shall not be permitted.

406.2.6 Fuel dispensing. The dispensing of fuel shall only be permitted in motor fuel-dispensing facilities in accordance with Section 406.7.

406.2.7 Electric vehicle charging stations and systems. Where provided, electric vehicle charging systems shall be installed in accordance with *the California Electrical Code and the California Green Building Standards Code*. Electric vehicle charging system equipment shall be listed and labeled in accordance with UL 2202. Electric vehicle supply equipment shall be listed and labeled in accordance with UL 2594. Accessibility to electric vehicle charging stations shall be provided in accordance with *Chapters 11A and/or 11B.*

406.2.8 Mixed occupancies and uses. Mixed uses shall be allowed in the same building as public parking garages and repair garages in accordance with Section 508.1. Mixed uses in the same building as an open parking garage are subject to Sections 402.4.2.3, 406.5.11, 508.1, 510.3, 510.4 and 510.7.

406.2.9 Equipment and appliances. Equipment and appliances shall be installed in accordance with Sections 406.2.9.1 through 406.2.9.3 and the *California Mechanical Code, California Plumbing Code and California Electrical Code.*

406.2.9.1 Elevation of ignition sources. Equipment and appliances having an ignition source and located in hazardous locations and public garages, private garages, repair garages, automotive motor fuel-dispensing facilities and parking garages shall be elevated such that the source of ignition is not less than 18 inches (457 mm) above the floor surface on which the equipment or appliance rests. For the purpose of this section, rooms or spaces that are not part of the living space of a dwelling unit and that communicate directly with a private garage through openings shall be considered to be part of the private garage.

Exception: Elevation of the ignition source is not required for appliances that are listed as flammable vapor ignition resistant.

406.2.9.1.1 Parking garages. Connection of a parking garage with any room in which there is a fuel-fired appliance shall be by means of a vestibule providing a two-doorway separation, except that a single door is permitted where the sources of ignition in the appliance are elevated in accordance with Section 406.2.9.

Exception: This section shall not apply to appliance installations complying with Section 406.2.9.2 or 406.2.9.3.

406.2.9.2 Public garages. Appliances located in public garages, motor fuel-dispensing facilities, repair garages or other areas frequented by motor vehicles shall be installed not less than 8 feet (2438 mm) above the floor. Where motor vehicles are capa-

ble of passing under an appliance, the appliance shall be installed at the clearances required by the appliance manufacturer and not less than 1 foot (305 mm) higher than the tallest vehicle garage door opening.

Exception: The requirements of this section shall not apply where the appliances are protected from motor vehicle impact and installed in accordance with Section 406.2.9.1 and NFPA 30A.

406.2.9.3 Private garages. Appliances located in private garages and carports shall be installed with a minimum clearance of 6 feet (1829 mm) above the floor.

Exception: The requirements of this section shall not apply where the appliances are protected from motor vehicle impact and are installed in accordance with Section 406.2.9.1.

406.3 Private garages and carports. Private garages and carports shall comply with Sections 406.2 and 406.3, or they shall comply with Sections 406.2 and 406.4.

406.3.1 Classification. Private garages and carports shall be classified as Group U occupancies. Each private garage shall be not greater than 1,000 square feet (93 m^2) in area. Multiple private garages are permitted in a building where each private garage is separated from the other private garages by 1-hour fire barriers in accordance with Section 707, or 1-hour horizontal assemblies in accordance with Section 711, or both.

Exception: *The area of a private garage accessory to Group R-3 one- or two-family dwellings shall not be greater than 3,000 square feet in area.*

406.3.2 Separation. For other than private garages adjacent to dwelling units, the separation of private garages from other occupancies shall comply with Section 508. Separation of private garages from dwelling units shall comply with Sections 406.3.2.1 and 406.3.2.2.

406.3.2.1 Dwelling unit separation. The private garage shall be separated from the dwelling unit and its attic area by means of gypsum board, not less than $^1/_2$ inch (12.7 mm) in thickness, applied to the garage side. Garages beneath habitable rooms shall be separated from all habitable rooms above by not less than a $^5/_8$-inch (15.9 mm) Type X gypsum board or equivalent and $^1/_2$-inch (12.7 mm) gypsum board applied to structures supporting the separation from habitable rooms above the garage. Door openings between a private garage and the dwelling unit shall be equipped with either solid wood doors or solid or honeycomb core steel doors not less than $1^3/_8$ inches (34.9 mm) in thickness, or doors in compliance with Section 716.2.2.1 with a fire protection rating of not less than 20 minutes. Doors shall be self-closing and self-latching.

406.3.2.2 Ducts. Ducts in a private garage and ducts penetrating the walls or ceilings separating the dwelling unit from the garage, including its attic area, shall be constructed of sheet steel of not less than 0.019 inch (0.48 mm) in thickness and shall not have openings into the garage.

406.3.3 Carports. Carports shall be open on not fewer than two sides. Carports open on fewer than two sides shall be considered to be a garage and shall comply with the requirements for private garages.

406.3.3.1 Carport separation. A separation is not required between a Group R-3 and U carport, provided that the carport is entirely open on two or more sides and there are not enclosed areas above.

406.4 Public parking garages. Parking garages, other than private garages, shall be classified as public parking garages and shall comply with the provisions of Sections 406.2 and 406.4 and shall be classified as either an open parking garage or an enclosed parking garage. Open parking garages shall also comply with Section 406.5. Enclosed parking garages shall also comply with Section 406.6. See Section 510 for special provisions for parking garages.

406.4.1 Guards. Guards shall be provided in accordance with Section 1015. Guards serving as vehicle barriers shall comply with Sections 406.4.2 and 1015.

406.4.2 Vehicle barriers. Vehicle barriers not less than 2 feet 9 inches (835 mm) in height shall be placed where the vertical distance from the floor of a drive lane or parking space to the ground or surface directly below is greater than 1 foot (305 mm). Vehicle barriers shall comply with the loading requirements of Section 1607.11.

Exception: Vehicle barriers are not required in vehicle storage compartments in a mechanical access parking garage.

406.4.3 Ramps. Vehicle ramps shall not be considered as required exits unless pedestrian facilities are provided. Vehicle ramps that are utilized for vertical circulation as well as for parking shall not exceed a slope of 1 unit vertical in 15 units horizontal (6.67 percent slope).

406.5 Open parking garages. Open parking garages shall comply with Sections 406.2, 406.4 and 406.5.

406.5.1 Construction. Open parking garages shall be of Type I, II or IV construction. Open parking garages shall meet the design requirements of Chapter 16. For vehicle barriers, see Section 406.4.2.

406.5.2 Openings. For natural ventilation purposes, the exterior side of the structure shall have uniformly distributed openings on two or more sides. The area of such openings in exterior walls on a tier shall be not less than 20 percent of the total perimeter wall area of each tier. The aggregate length of the openings considered to be providing natural ventilation shall be not less than 40 percent of the perimeter of the tier. Interior walls shall be not less than 20 percent open with uniformly distributed openings.

Exception: Openings are not required to be distributed over 40 percent of the building perimeter where the required openings are uniformly distributed over two opposing sides of the building.

406.5.2.1 Openings below grade. Where openings below grade provide required natural ventilation, the outside horizontal clear space shall be one and one-half times the depth of the opening. The width of the horizontal clear space shall be maintained from grade down to the bottom of the lowest required opening.

406.5.3 Mixed occupancies and uses. Mixed uses shall be allowed in the same building as an open parking garage subject to the provisions of Sections 402.4.2.3, 406.5.11, 508.1, 510.3, 510.4 and 510.7.

406.5.4 Area and height. Area and height of open parking garages shall be limited as set forth in Chapter 5 for Group S-2 occupancies and as further provided for in Section 508.1.

TABLE 406.5.4—OPEN PARKING GARAGES AREA AND HEIGHT

TYPE OF CONSTRUCTION	AREA PER TIER (square feet)	HEIGHT (in tiers)		
		Ramp access	Mechanical access	
			Automatic sprinkler system	
			No	Yes
IA	Unlimited	Unlimited	Unlimited	Unlimited
IB	Unlimited	12 tiers	12 tiers	18 tiers
IIA	50,000	10 tiers	10 tiers	15 tiers
IIB	50,000	8 tiers	8 tiers	12 tiers
IV	50,000	4 tiers	4 tiers	4 tiers

For SI: 1 square foot = 0.0929 m^2.

406.5.4.1 Single use. Where the open parking garage is used exclusively for the parking or storage of private motor vehicles, and the building is without other uses, the area and height shall be permitted to comply with Table 406.5.4, along with increases allowed by Section 406.5.5.

Exception: The grade-level tier is permitted to contain an office, waiting and toilet rooms having a total combined area of not more than 1,000 square feet (93 m^2). Such area need not be separated from the open parking garage.

In open parking garages having a spiral or sloping floor, the horizontal projection of the structure at any cross section shall not exceed the allowable area per parking tier. In the case of an open parking garage having a continuous spiral floor, each 9 feet 6 inches (2896 mm) of height, or portion thereof, shall be considered under these provisions to be a tier.

406.5.5 Area and height increases. The allowable area and height of open parking garages shall be increased in accordance with the provisions of this section. Garages with sides open on three-fourths of the building's perimeter are permitted to be increased by 25 percent in area and one tier in height. Garages with sides open around the entire building's perimeter are permitted to be increased by 50 percent in area and one tier in height. For a side to be considered open under these provisions, the total area of openings along the side shall be not less than 50 percent of the interior area of the side at each tier and such openings shall be equally distributed along the length of the tier. For purposes of calculating the interior area of the side, the height shall not exceed 7 feet (2134 mm).

Allowable tier areas in Table 406.5.4 shall be increased for open parking garages constructed to heights less than the table maximum. The gross tier area of the garage shall not exceed that permitted for the higher structure. Not fewer than three sides of each such larger tier shall have continuous horizontal openings not less than 30 inches (762 mm) in clear height extending for not less than 80 percent of the length of the sides. All parts of such larger tier shall be not more than 200 feet (60 960 mm) horizontally from such an opening. In addition, each such opening shall face a street or yard with access to a street with a width of not less than 30 feet (9144 mm) for the full length of the opening, and standpipes shall be provided in each such tier.

Open parking garages of Type II construction, with all sides open, shall be unlimited in allowable area where the building height does not exceed 75 feet (22 860 mm). For a side to be considered open, the total area of openings along the side shall be not less than 50 percent of the interior area of the side at each tier and such openings shall be equally distributed along the length of the tier. For purposes of calculating the interior area of the side, the height shall not exceed 7 feet (2134 mm). All portions of tiers shall be within 200 feet (60 960 mm) horizontally from such openings or other natural ventilation openings as defined in Section 406.5.2. These openings shall be permitted to be provided in courts with a minimum dimension of 20 feet (6096 mm) for the full width of the openings.

406.5.6 Fire separation distance. Exterior walls and openings in exterior walls shall comply with Table 601 and Table 705.5. The distance to an adjacent lot line shall be determined in accordance with Section 705 and Table 705.5.

[BE] 406.5.7 Means of egress. Where persons other than parking attendants are permitted, open parking garages shall meet the means of egress requirements of Chapter 10. Where persons other than parking attendants are not permitted, there shall be not fewer than two exit stairways. Each exit stairway shall be not less than 36 inches (914 mm) in width. Lifts shall be permitted to be installed for use of employees only, provided that they are completely enclosed by noncombustible materials.

[F] 406.5.8 Standpipe system. An open parking garage shall be equipped with a standpipe system as required by Section 905.3.

406.5.9 Enclosure of vertical openings. Enclosure shall not be required for vertical openings except as specified in Section 406.5.7.

406.5.10 Ventilation. Ventilation, other than the percentage of openings specified in Section 406.5.2, shall not be required.

406.5.11 Prohibitions. The following uses and alterations are not permitted:

1. Vehicle repair work.
2. Parking of buses, trucks and similar vehicles.
3. Partial or complete closing of required openings in exterior walls by tarpaulins or any other means.
4. Dispensing of fuel.

406.6 Enclosed parking garages. Enclosed parking garages shall comply with Sections 406.2, 406.4 and 406.6.

406.6.1 Heights and areas. Enclosed vehicle parking garages and portions thereof that do not meet the definition of open parking garages shall be limited to the allowable heights and areas specified in Sections 504 and 506 as modified by Section 507. Roof parking is permitted.

406.6.2 Ventilation. A mechanical ventilation system and exhaust system shall be provided in accordance with Chapters 4 and 5 of the *California Mechanical Code*.

Exception: Mechanical ventilation shall not be required for enclosed parking garages that are accessory to one- and two-family dwellings.

[F] 406.6.3 Automatic sprinkler system. An enclosed parking garage shall be equipped with an automatic sprinkler system in accordance with Section 903.2.10.

406.6.4 Mechanical-access enclosed parking garages. Mechanical-access enclosed parking garages shall be in accordance with Sections 406.6.4.1 through 406.6.4.4.

406.6.4.1 Separation. Mechanical-access enclosed parking garages shall be separated from other occupancies and accessory uses by not less than 2-hour fire barriers constructed in accordance with Section 707 or by not less than 2-hour horizontal assemblies constructed in accordance with Section 711, or both. *Refer to Table 508.4 for additional requirements.*

406.6.4.2 Smoke removal. A mechanical smoke removal system, installed in accordance with Section 910.4, shall be provided for all areas containing a mechanical-access enclosed parking garage.

406.6.4.3 Fire control equipment room. Fire control equipment, consisting of the fire alarm control unit, mechanical ventilation controls and an emergency shutdown switch, shall be provided in a room located where the equipment is able to be accessed by the fire service from a secured exterior door of the building. The room shall be not less than 50 square feet (4.65 m^2) in area and shall be in a location that is approved by the fire code official.

Exception: *A fire control room shall not be required where there is a fire command center provided in compliance with Section 911 of this code.*

406.6.4.3.1 Emergency shutdown switch. The mechanical parking system shall be provided with a manually activated emergency shutdown switch for use by emergency personnel. The switch shall be clearly identified and shall be in a location approved by the fire code official.

406.6.4.4 Fire department access doors. Access doors shall be provided in accordance with Section 3206.7 of the *California Fire Code.*

406.7 Motor fuel-dispensing facilities. Motor fuel-dispensing facilities shall comply with the *California Fire Code* and Sections 406.2 and 406.7.

406.7.1 Vehicle fueling pad. The vehicle shall be fueled on noncoated concrete or other approved paving material having a resistance not exceeding 1 megohm as determined by the methodology in CEN EN 1081.

406.7.2 Canopies. Canopies under which fuels are dispensed shall have a clear, unobstructed height of not less than 13 feet 6 inches (4115 mm) to the lowest projecting element in the vehicle drive-through area. Canopies and their supports over pumps shall be of noncombustible materials, fire-retardant-treated wood complying with Chapter 23, heavy timber complying with Section 2304.11 or construction providing 1-hour fire resistance. Combustible materials used in or on a canopy shall comply with one of the following:

1. Shielded from the pumps by a noncombustible element of the canopy, or heavy timber complying with Section 2304.11.
2. Plastics covered by aluminum facing having a thickness of not less than 0.010 inch (0.30 mm) or corrosion-resistant steel having a base metal thickness of not less than 0.016 inch (0.41 mm). The plastic shall have a flame spread index of 25 or less and a smoke-developed index of 450 or less when tested in the form intended for use in accordance with ASTM E84 or UL 723 and a self-ignition temperature of 650°F (343°C) or greater when tested in accordance with ASTM D1929.
3. Panels constructed of light-transmitting plastic materials shall be permitted to be installed in canopies erected over motor vehicle fuel-dispensing station fuel dispensers, provided that the panels are located not less than 10 feet (3048 mm) from any building on the same lot and face yards or streets not less than 40 feet (12 192 mm) in width on the other sides. The aggregate areas of plastics shall be not greater than 1,000 square feet (93 m^2). The maximum area of any individual panel shall be not greater than 100 square feet (9.3 m^2).

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406.7.2.1 Canopies used to support gaseous hydrogen systems. Canopies that are used to shelter dispensing operations where flammable compressed gases are located on the roof of the canopy shall be in accordance with the following:

1. The canopy shall meet or exceed Type I construction requirements.
2. Operations located under canopies shall be limited to refueling only.
3. The canopy shall be constructed in a manner that prevents the accumulation of hydrogen gas.

[F] 406.8 Repair garages. Repair garages shall be constructed in accordance with the *California Fire Code* and Sections 406.2 and 406.8. This occupancy shall not include motor fuel-dispensing facilities, as regulated in Section 406.7.

[F] 406.8.1 Ventilation. Repair garages shall be mechanically ventilated in accordance with the *California Mechanical Code.* The ventilation system shall be controlled at the entrance to the garage.

[F] 406.8.2 Gas detection system. Repair garages used for repair of vehicles fueled by nonodorized gases including but not limited to hydrogen and nonodorized LNG, shall be provided with a gas detection system that complies with Section 916. The gas detection system shall be designed to detect leakage of nonodorized gaseous fuel. Where lubrication or chassis service pits are provided in garages used for repairing nonodorized LNG-fueled vehicles, gas sensors shall be provided in such pits.

[F] 406.8.2.1 System activation. Activation of a gas detection alarm shall result in all of the following:

1. Initiation of distinct audible and visual alarm signals in the repair garage, where the ventilation system is interlocked with gas detection.
2. Deactivation of all heating systems located in the repair garage.
3. Activation of the mechanical ventilation system, where the system is interlocked with gas detection.

[F] 406.8.2.2 Failure of the gas detection system. Failure of the gas detection system shall automatically deactivate the heating system, activate the mechanical ventilation system where the system is interlocked with the gas detection system, and cause a trouble signal to sound at an approved location.

[F] 406.8.3 Automatic sprinkler system. A repair garage shall be equipped with an automatic sprinkler system in accordance with Section 903.2.9.1.

406.9 Electric vehicle. [SFM]

406.9.1 Charging. *In any building or interior area used for charging electric vehicles, electrical equipment shall be installed in accordance with the California Electrical Code.*

406.9.2 Ventilation. *Mechanical exhaust ventilation, when required by the California Electrical Code shall be provided at a rate as required by Article 625 or as required by Section 1202 of the California Building Code whichever is greater. The ventilation system shall include both the supply and exhaust equipment and shall be permanently installed and located to intake supply air from the outdoors and vent the exhaust directly to the outdoors without conducting the exhaust air through other spaces within the building.*

Exception: *Positive pressure ventilation systems shall only be allowed in buildings or areas that have been designed and approved for that application.*

406.9.3 Electrical interface. *The electrical supply circuit to electrically powered mechanical ventilation equipment shall be interlocked with the recharging equipment used to supply the vehicle(s) being charged, and shall remain energized during the entire charging cycle. Electric vehicle recharging equipment shall be marked or labeled in accordance with the California Electrical Code.*

Exceptions:

1. *Exhaust ventilation shall not be required in areas with an approved engineered ventilation system, which maintains a hydrogen gas concentration at less than 25 percent of the lower flammability limit.*
2. *Mechanical exhaust ventilation for hydrogen shall not be required where the charging equipment utilized is installed and listed for indoor charging of electric vehicles without ventilation.*

SECTION 407—GROUP I-2

407.1 General. Occupancies in Group I-2 shall comply with the provisions of Sections 407.1 through *407.13* and other applicable provisions of this code.

407.1.1 Construction. *Group I-2 occupancies wherein mental health patients are restrained shall be housed in buildings of Type IA or Type IB construction.*

Exception: *Occupancies in Group I-2 wherein mental health patients are restrained are permitted to be housed in one-story buildings of Type IIA, Type IIIA or Type VA construction provided the floor area does not exceed 5,200 square feet (483 m^2) between fire walls of two-hour fire-resistive construction with openings protected by fire assemblies having a $1^1/_2$-hour fire protection rating.*

407.2 Corridors continuity and separation. Corridors in occupancies in Group I-2 shall be continuous to the exits and shall be separated from other areas in accordance with Section 407.3 except spaces conforming to Sections 407.2.1 through 407.2.6.

407.2.1 Waiting and similar areas. Waiting areas *and similar* public-use areas or group meeting spaces constructed as required for corridors shall be permitted to be open to a corridor, only where all of the following criteria are met:

1. The spaces are not occupied as care recipient's sleeping rooms, treatment rooms, incidental uses *listed in Table 509,* in accordance with Section 509, or hazardous uses.
2. The open space is protected by an automatic fire detection system installed in accordance with Section 907.

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3. The corridors onto which the spaces open, in the same smoke compartment, are protected by an automatic *smoke* detection system installed in accordance with Section 907, *and* the smoke compartment in which the spaces are located is equipped throughout with quick-response sprinklers in accordance with Section 903.3.2.
4. The space is arranged so as not to obstruct access to the required exits.
5. *Each space is located to permit direct visual supervision by the facility staff.*

407.2.2 *Nurse* stations. Spaces for care providers', supervisory staff, doctors' and nurses' charting, communications and related clerical areas shall be permitted to be open to, *or located within* the corridor, *provided the required construction along the perimeter of the corridor is maintained. Construction of nurse stations or portions of nurse stations, within the envelope of the corridor is not required to be fire-resistive rated. Nurse stations in new and existing facilities see the California Code of Regulations, Title 19, Division 1, Chapter 1, Subchapter 1, Article 3, Section 3.11(d) for storage and equipment requirements.*

In detention or secure mental health facilities, the provisions above applies to enclosed nurse stations within the corridor.

407.2.3 Psychiatric treatment areas. Areas wherein psychiatric care recipients who are incapable of self-preservation are housed, or group meeting or multipurpose therapeutic spaces other than incidental uses in accordance with Section 509, under continuous supervision by facility staff, shall be permitted to be open to the corridor, where the following criteria are met:

1. Each area does not exceed 1,500 square feet (140 m^2).
2. The area is located to permit supervision by the facility staff.
3. The area is arranged so as not to obstruct any access to the required exits.
4. The area is equipped with an automatic fire detection system installed in accordance with Section 907.2.
5. Not more than one such space is permitted in any one smoke compartment.
6. The walls and ceilings of the space are constructed as required for corridors.

407.2.4 Gift shops. Gift shops and associated storage that are less than 500 square feet (455 m^2) in area shall be permitted to be open to the corridor where such spaces are constructed as required for corridors.

➡ **407.2.5 Nursing home housing units.** In Group I-2 occupancies, in areas where nursing home residents are housed, shared living spaces, group meeting or multipurpose therapeutic spaces shall be permitted to be open to the corridor, where all of the following criteria are met:

1. The walls and ceilings of the space are constructed as required for corridors.
2. The spaces are not occupied as resident sleeping rooms, treatment rooms, incidental uses in accordance with Section 509, or hazardous uses.
3. The open space is protected by an automatic *smoke* detection system installed in accordance with Section 907.
4. The corridors onto which the spaces open, in the same smoke compartment, are protected by an automatic *smoke* detection system installed in accordance with Section 907, *and* the smoke compartment in which the spaces are located is equipped throughout with quick-response sprinklers in accordance with Section 903.3.2.
5. The space is arranged so as not to obstruct access to the required exits.
6. *Each space is located to permit direct visual supervision by the facility staff.*

➡ **407.2.6 Nursing home cooking facilities.** In Group I-2 occupancies, rooms or spaces that contain a cooking facility with domestic cooking appliances shall be permitted *in fully sprinklered buildings* where all of the following criteria are met:

1. The number of care recipients housed in the smoke compartment shall not be greater than 30.
2. The number of care recipients served by the cooking facility shall not be greater than 30.
3. *Only* one cooking facility area shall be permitted in a smoke compartment.
4. The space containing the domestic cooking facility shall be arranged so as not to obstruct access to the required exit.
5. The cooking appliance shall comply with Section 407.2.7.

407.2.7 Domestic cooking appliances. In Group I-2 occupancies, installation of cooking appliances used in domestic cooking facilities shall comply with all of the following:

1. The types of cooking appliances permitted shall be limited to ovens, cooktops, ranges, warmers and microwaves.
2. Domestic cooking hoods installed and constructed in accordance with Section 505 of the *California Mechanical Code* shall be provided over cooktops and ranges.
3. Cooktops and ranges shall be protected in accordance with Section 904.15.
4. A shut-off for the fuel and electrical power supply to the cooking equipment shall be provided in a location to which only staff has access.
5. A timer shall be provided that automatically deactivates the cooking appliances within a period of not more than 120 minutes.

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6. A portable fire extinguisher shall be provided. Installation shall be in accordance with Section 906, and the extinguisher shall be located a distance of travel of 30 feet (9144 mm) or less from each domestic cooking appliance.

Exceptions:

1. Cooktops and ranges located within smoke compartments with no patient sleeping or patient care areas are not required to comply with *Items 3, 4 and 5 of* this section.
2. Cooktops and ranges used for care recipient training or nutritional counseling are not required to comply with Item 3 of this section.

407.3 Corridor wall construction. Corridor walls shall be constructed as *fire* partitions in accordance with Section *708*.

407.3.1 Corridor doors. *In fully sprinklered buildings,* corridor doors, other than those in a wall required to be rated by Section 509.4 or for the enclosure of a vertical opening or an exit, shall not have a required fire protection rating and shall not be required to be equipped with self-closing or automatic-closing devices, but shall provide an effective barrier to limit the transfer of smoke and shall be equipped with positive latching. *In Group I-2 Occupancies, self-closing or automatic-closing devices are not required on corridor doors to patient sleeping rooms, treatment rooms and offices located in areas specified in Sections 1224 and 1225, excluding offices specified in Sections 1224.21 and 1225.4.3.* Roller latches are not permitted. Other doors shall conform to Section 716.

407.3.1.1 Door construction. *Corridor doors* not required to have a fire protection rating shall comply with the following:

1. Solid doors shall have close-fitting operational tolerances, head and jamb stops.
2. Dutch-style doors shall have an astragal, rabbet or bevel at the meeting edges of the upper and lower door sections. Both the upper and lower door sections shall have latching hardware. Dutch-style doors shall have hardware that connects the upper and lower sections to function as a single leaf.

407.3.1.2 Swing of corridor doors. *Corridor doors, other than those equipped with self-closing or automatic-closing devices shall not swing into the required width of corridors.*

Exception: *In detention and/or secure mental health facilities, doors may swing into required width of corridors as long as 44 inches clear is maintained with any one door open 90 degrees and clear corridor widths required in Chapter 12 can be maintained with doors open 180 degrees.*

407.3.2 Glazing. *In fully sprinklered buildings, fixed fully tempered or laminated glass in wood or metal frames may be used in corridor walls, provided the glazed area does not exceed 25 percent of the areas of the corridor wall of the room. The total area of glass in corridor walls is not limited when the glazing is fixed $^{1}/_{3}$-hour fire-protection-rated glazing in approved frames and the size of individual glazed panel does not exceed 1,296 square inches (0.836 m^2).*

[BE] 407.4 Means of egress. Group I-2 occupancies shall be provided with means of egress complying with Chapter 10 and Sections 407.4.1 through 407.4.4. The fire safety and evacuation plans provided in accordance with Section 1002.2 shall identify the building components necessary to support a defend-in-place emergency response in accordance with Sections 403 and 404 of the *California Fire Code*.

[BE] 407.4.1 Direct access to a corridor. Habitable rooms in Group I-2 occupancies shall have an exit access door leading directly to a corridor.

Exceptions:

1. Rooms with exit doors opening directly to the outside at ground level.
2. Rooms arranged as care suites complying with Section 407.4.4.

[BE] 407.4.1.1 Locking devices. Locking devices that restrict access to a care recipient's room from the corridor and that are operable only by staff from the corridor side shall not restrict the means of egress from the care recipient's room.

Exceptions:

1. This section shall not apply to rooms in psychiatric treatment and similar care areas.
2. Locking arrangements in accordance with Section 1010.2.13.

407.4.1.2 Basement exits. *All rooms below grade shall have not less than one exit access that leads directly to an exterior exit door opening directly to an exit discharge at grade plane or the public way.*

[BE] 407.4.2 Distance of travel. The distance of travel between any point in a Group I-2 occupancy sleeping room, not located in a care suite, and an exit access door in that room shall be not greater than 50 feet (15 240 mm).

407.4.2.1 Two means of egress. *Any sleeping room of more than 1,000 square feet (93 m^2) shall have no fewer than two exit access doors from the sleeping room located in accordance with Section 1007.1. Any room, other than sleeping rooms, with an area of more than 2,500 square feet (232 m^2) shall have no fewer than two exit access doors from the room located in accordance with Section 1007.1.*

[BE] 407.4.3 ***Reserved.***

[BE] 407.4.4 Group I-2 care suites. Care suites in Group I-2 shall comply with Sections 407.4.4.1 through 407.4.4.5 and either Section 407.4.4.6 or 407.4.4.7.

[BE] 407.4.4.1 Exit access through care suites. Exit access from all other portions of a building not classified as a care suite shall not pass through a care suite.

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[BE] 407.4.4.2 Separation. Care suites shall be separated from other portions of the building, including other care suites, *not less than a one-hour fire barrier complying with Section 707.*

[BE] 407.4.4.3 Access to corridor. Every care suite shall have a door leading directly to an exit access corridor or horizontal exit. Movement from habitable rooms within a care suite shall not require more than 100 feet (30 480 mm) of travel within the care suite to a door leading to the exit access corridor or horizontal exit. Where a care suite is required to have more than one exit access door by Section 407.4.4.6.2 or 407.4.4.7.2, the additional door shall lead directly to an exit access corridor, exit or an adjacent suite.

407.4.4.3.1 Sleeping room. *Sleeping rooms shall be limited to one intervening room.*

407.4.4.3.2 Two intervening rooms. *Movement from habitable rooms other than sleeping rooms located within a care suite, shall not require passage through more than two intervening rooms and 50 feet (15 240 mm) distance of exit access travel within the care suite.*

Exception: *The distance of travel shall be permitted to be increased to 100 feet (38 100 mm) where an automatic fire sprinkler system is provided throughout the Group I-2 fire area and an automatic smoke detection system is provided throughout the care suite and installed in accordance with NFPA 72.*

[BE] 407.4.4.4 ***Reserved.***

[BE] 407.4.4.5 Doors within care suites. Doors in care suites serving habitable rooms shall be permitted to comply with one of the following:

1. Manually operated horizontal sliding doors permitted in accordance with Exception 9 to Section 1010.1.2.
2. Power-operated doors permitted in accordance with Section 1010.1.2, Exception 7.
3. Means of egress doors complying with Section 1010.

[BE] 407.4.4.6 Care suites containing sleeping room areas. Sleeping rooms shall be permitted to be grouped into care suites where one of the following criteria is met:

1. The care suite is not used as an exit access for more than eight care recipient beds.
2. The arrangement of the care suite allows for direct and constant visual supervision into the sleeping rooms by care providers.
3. *In fully sprinklered buildings,* an automatic smoke detection system is provided in the sleeping rooms and installed in accordance with *Section 907.2.6.2.2, Item 1 and* NFPA 72.

[BE] 407.4.4.6.1 Area. Care suites containing sleeping rooms shall be not greater than *5,000* square feet (*465* m^2) in area.

Exceptions*:*

1. *Care suites containing sleeping rooms shall be permitted to be not greater than 7,500 square feet (696 m^2) in area where an automatic fire sprinkler system is provided throughout the Group I-2 fire area.*
2. Care suites containing sleeping rooms shall be permitted to be not greater than 10,000 square feet (929 m^2) in area *where an automatic fire sprinkler system is provided throughout the Group I-2 fire area and* where an automatic smoke detection system is provided throughout the care suite and installed in accordance with *Section 907*.

[BE] 407.4.4.6.2 Exit access. Any sleeping room, or any care suite that contains sleeping rooms, of more than 1,000 square feet (93 m^2) shall have not fewer than two exit access doors from the care suite located in accordance with Section 1007.

[BE] 407.4.4.7 Care suites not containing sleeping rooms. Areas not containing sleeping rooms, but only treatment areas and the associated rooms, spaces or circulation space, shall be permitted to be grouped into care suites and shall conform to the limitations in Sections 407.4.4.7.1 and 407.4.4.7.2.

[BE] 407.4.4.7.1 Area. Care suites of rooms, other than sleeping rooms, shall have an area not greater than *10,000* square feet (*929* m^2).

[BE] 407.4.4.7.2 Exit access. *Any room or* care suites, other than sleeping rooms, with an area of more than 2,500 square feet (232 m^2) shall have not fewer than two exit access doors from the *room or* care suite located in accordance with Section 1007.

407.4.5 Group I-2 nonpatient-care suites. *The means of egress provisions for nonpatient-care suites shall be in accordance with the primary use and occupancy of the suite.*

407.4.5.1 Separation. *Nonpatient-care suites shall be separated from other portions of the building, including other suites, by not less than a 1-hour fire barrier complying with Section 707. Each suite of rooms shall be separated from the remainder of the building by not less than a 1-hour fire barrier.*

407.4.5.2 Area. *Nonpatient-care suites of rooms shall have an area not greater than 10,000 square feet (929 m^2).*

407.4.5.3 Automatic sprinkler system protection. *Nonpatient-care suites shall be located in fully sprinklered buildings.*

[BE] 407.5 Smoke barriers. Smoke barriers shall be provided to subdivide every story used by persons receiving care, treatment or sleeping into not fewer than two smoke compartments. Smoke barriers shall be provided to subdivide other stories with an occupant load of 50 or more persons, *regardless of occupancy or use,* into not fewer than two smoke compartments. The smoke barrier shall be in accordance with Section 709.

Exceptions:

1. *This requirement shall not apply to the following:*
   1.1. *Any story, not containing a Group I-2 occupancy, that is located above a story containing a Group I-2 occupancy.*

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1.2. Areas that do not contain a Group I-2 occupancy, where such areas are separated from the Group I-2 occupancy by a horizontal exit in accordance with Section 1026.2.

1.3. Any story, not containing a Group I-2 occupancy, that is located more than one story below a story containing a Group I-2 occupancy.

1.4. Any story housing only mechanical equipment where such story is located below a story containing a Group I-2 occupancy and is separated from the story above by a horizontal assembly having not less than a 2 hour fire resistance-rating.

[BE] 407.5.1 Smoke compartment size. Stories shall be divided into smoke compartments with an area of not more than 22,500 square feet (2092 m^2) in Group I-2 occupancies.

[BE] 407.5.2 Exit access travel distance. The distance of travel from any point in a smoke compartment to a smoke barrier door shall be not greater than 200 feet (60 960 mm).

[BE] 407.5.3 Refuge area. Refuge areas shall be provided within each smoke compartment. The size of the refuge area shall accommodate the occupants and care recipients from the adjoining smoke compartment. Where a smoke compartment is adjoined by two or more smoke compartments, the minimum area of the refuge area shall accommodate the largest occupant load of the adjoining compartments. The size of the refuge area shall provide the following:

1. Not less than 30 net square feet (2.8 m^2) for each care recipient confined to bed or stretcher.
2. Not less than 6 square feet (0.56 m^2) for each ambulatory care recipient not confined to bed or stretcher and for other occupants.

Areas or spaces permitted to be included in the calculation of refuge area are corridors, sleeping areas, treatment rooms, lounge or dining areas and other low-hazard areas.

[BE] 407.5.4 Independent egress. A means of egress shall be provided from each smoke compartment created by smoke barriers without having to return through the smoke compartment from which means of egress originated. Smoke compartments that do not contain an exit shall be provided with direct access to not less than two adjacent smoke compartments.

[BE] 407.5.5 Horizontal assemblies. Horizontal assemblies supporting smoke barriers required by this section shall be designed to resist the movement of smoke. Elevator lobbies shall be in accordance with Section 3006.2.

407.6 Automatic-closing doors. Automatic-closing doors with hold-open devices shall comply with Sections 709.5 and 716.2.

407.6.1 Activation of automatic-closing doors. Automatic-closing doors on hold-open devices in accordance with Section 716.2.6.6 shall also close upon activation of a fire alarm system, an automatic sprinkler system, or both. The automatic release of the hold-open device on one door shall release all such doors within the same smoke compartment.

[F] 407.7 Automatic sprinkler system. *Every facility as specified herein wherein more than six clients or patients are housed or cared for on the premises on a 24-hour per-day-basis shall have installed and maintained in an operable condition in every building or portion thereof where clients or patients are housed, an automatic sprinkler system of a type approved by the state fire marshal. The provisions of this subsection shall apply to every person, firm or corporation establishing, maintaining or operating a hospital, children's home, children's nursery or institution, or a home or institution for the care of aged or persons with dementia or other cognitive impairments, or any institution for persons with mental illness or persons with developmental disabilities and any nursing or convalescent home, and to any state-owned or state-occupied building used for any of the types of facilities specified herein.*

Exceptions:

1. *This section shall not apply to homes or institutions for the 24-hour-per-day care of ambulatory children if all of the following conditions are satisfied:*
   - *1.1. The buildings or portions thereof in which children are housed are not more than two stories in height and are constructed and maintained in accordance with regulations adopted by the state fire marshal.*
   - *1.2. The buildings or portions thereof housing more than six such children shall have installed and maintained in an operable condition therein, a fire alarm system of a type approved by the state fire marshal. Such system shall be activated by detectors responding to invisible particles of combustion other than heat, except that detectors used in closets, usable under-floor areas, storage rooms, bathrooms, attached garages, attics, plenums, laundry rooms and rooms of similar use, may be heat-responsive devices.*
   - *1.3. The building or portions thereof do not house persons with mental illness or children with developmental disabilities.*
2. *This section shall not apply to any one-story building or structure of an institution or home for the care of the aged providing 24-hour-per-day care if such building or structure is used or intended to be used for the housing of no more than six ambulatory aged persons. Such buildings or institutions shall have installed and maintained in an operable condition herein a fire alarm system of a type approved by the state fire marshal. Such system shall be activated by detectors responding to either visible or invisible particles of combustion other than heat, except that detectors used in closets, usable under-floor areas, storage rooms, bathrooms, attached garages, attics, plenums, laundry rooms and rooms of similar use, may be heat-responsive devices.*

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3. *This section shall not apply to occupancies or any alterations thereto conforming to the construction provisions of this exception which were under construction or in existence on March 4, 1972. "Under construction" as used in this exception shall mean that actual work had been performed on the construction site and shall not be construed to mean that the hospital, home, nursery, institution, sanitarium or any portion thereof, was or is in the planning stage. The provisions of this exception shall apply to those buildings or structures having bearing walls and structural frames protected in accordance with the provisions of Column Type IA of Table 601.*
4. *In detention facilities where inmates are not restrained.*

The provisions of this section shall not apply to any facility used to house six or less persons on the premises.

***407.7.1** When a new addition is to be made to an unsprinklered building or structure as permitted by this subsection, such new addition shall be sprinklered as required by this section and shall be separated from the existing building or structures by not less than a two-hour fire-resistive fire barrier.*

When a sprinkler system is added to an existing unsprinklered building or structure, the sprinklered area(s) shall be separated from the remainder of the building by not less than a one-hour fire-resistive fire barrier. The provisions of this section do not apply to any facility used to house six or less persons on the premises.

[F] 407.8 Fire alarm system. A fire alarm system shall be provided in accordance with Section 907.2.6.

[F] 407.9 Automatic *smoke* detection. Automatic *smoke* detection shall be *provided in accordance with Section 907.2.6.2.2.*

➡ **[BE] 407.10 Secured yards.** Grounds are permitted to be fenced and gates therein are permitted to be equipped with locks, provided that safe dispersal areas having 30 net square feet (2.8 m^2) for bed and stretcher care recipients and 6 net square feet (0.56 m^2) for ambulatory care recipients and other occupants are located between the building and the fence. Such provided safe dispersal areas shall be located not less than 50 feet (15 240 mm) from the building they serve. *Each safe dispersal area shall have a minimum of two exits. The aggregate clear width of exits from a safe dispersal area shall be determined on the basis of not less than one exit unit of 22 inches (559 mm) for each 500 persons to be accommodated, and no exit shall be less than 44 inches (1118 mm) in width. Gates shall not be installed across corridors or passageways leading to such dispersal areas unless they comply with egress requirements. Keys to gate locks shall be provided in accordance with the California Fire Code.*

[F] 407.11 Electrical systems. In Group I-2 occupancies, *electrical construction and installation shall be* in accordance with the provisions of Chapter 27, *Article 517 of the California Electrical Code* and NFPA 99.

***407.12 Technology equipment center.** A technology equipment center serving a Group I-2 occupancy shall be separated from other portions of the building by not less than a 1-hour fire barrier constructed in accordance with Section 707 and a 1-hour horizontal assembly constructed in accordance with Section 711 or both.*

407.13 Special Hazards.

***407.13.1** Storage and handling of flammable, combustible liquids and hazardous materials shall be in accordance with the California Fire Code.*

***407.13.2** All exterior openings in a boiler room or room containing central heating equipment, if located below openings in another story, or if less than 10 feet (3048 mm) from other doors or windows of the same building, shall be protected by a fire assembly having a three-fourths-hour fire protection rating.*

***407.13.3 Safety padding.** See Sections 308.1 and 408.14.*

***407.13.4 Floor surfaces.** Rooms occupied by patients whose personal liberties are restrained shall have noncombustible floor surfaces see Sections 308.1 and 804.4.3.*

SECTION 408—GROUP I-3

408.1 General. Occupancies in Group I-3 shall comply with the provisions of Sections 408.1 through 408.11 and other applicable provisions of this code (see Section 308.5).

***408.1.2 Construction.** Group I-3 Occupancies shall be housed in buildings of Type IA or Type IB.*

***Exception:** Such occupancies may be housed in one-story buildings of Type IIA, Type IIIA or Type VA construction provided the floor area does not exceed 5,200 square feet (483 m^2) between fire walls of two-hour fire-resistive construction with openings protected by fire assemblies having 1- and $1^1/_2$-hour fire-protection rating.*

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408.1.2.1 Nonbearing walls and partitions interior. *Nonbearing cell or dormitory walls within cell complexes shall be of noncombustible construction.*

408.1.2.2 Intervening spaces. *Common rooms and spaces within Group I-3 occupancies of Type I construction shall be considered an intervening space in accordance with Section 1016.2 when the area is contained within housing units or suites, and not considered a corridor, when they meet any of the following:*

1. *Within prisons and local detention facilities of Type I construction, the exit access within a housing unit may be non-rated provided the required exit occupant load from any dayroom does not exceed 64 persons.*
2. *Within prison, jails and courthouses: Circulation within any temporary holding suite of Type I construction and an occupant load less than 100.*
3. *Within prisons and local detention facilities, correctional medical or mental health housing suites, of Type I construction and an occupant load less than 100.*
4. *Within prisons and local detention facilities of Type I construction, detention program housing units or suites having an occupant load less than 100.*

408.1.2.3 Courthouse holding facilities. *Group I-3 courthouse holding facilities shall be considered a separate and distinct building from the remaining courthouse building for the purpose of determining the type of construction where all of the following conditions are met:*

1. *2-hour fire barriers in accordance with Section 707 and 2-hour horizontal assemblies in accordance with Section 711 are provided to separate the courthouse holding facility from all other portions of the courthouse building.*
2. *Any of the structure used to support courthouse holding facilities meets the requirements for the Group I-3 portion of the building.*
3. *Each courthouse holding facility located above the first story is less than 1,000 square feet in area, and is designed to hold 10 or less in-custody defendants.*
4. *Courthouse holding facilities located above the first story containing an internal stairway discharging to the main courthouse holding facility at the first story or basement.*
5. *Additional exits from the courthouse holding facility located above the first story shall be permitted to exit through the courtrooms.*
6. *The main courthouse holding facility located on the first story or basement has at least one exit directly to the exterior and additional means of egress shall be permitted to pass through a 1-hour corridor or lobby in the courthouse building.*

408.1.2.4 Horizontal building separation for combined Group I-3/Group B occupancy. *A Group B Administration building one story in height shall be permitted to be located above a Group I-3 (or Group I-3/I-2) housing/treatment building that is one story above grade and shall be classified as a separate and distinct building for the purpose of determining the type of construction, and shall be considered a separate fire area, where all of the following conditions are met:*

1. *A 3-hour floor-ceiling assembly below the administration building is constructed as a horizontal assembly in accordance with Section 711.*
2. *Interior shafts for stairs, elevators and mechanical systems complete the 3-hour separation between the Group B and Group I-3 (or Group I-3/I-2).*
3. *The Group I-3 occupancy (or Group I-3/I-2 occupancies, correctional medical and mental health uses) below is minimum Type I-B construction with 2-hour fire resistive rated exterior walls.*
4. *No unprotected openings are allowed in lower roofs within 10 feet of unprotected windows in the upper floor.*
5. *The Group B building above is of noncombustible construction and equipped throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.1.*
6. *The Group B occupancy building above has all required means of egress capable of discharging directly to the exterior to a safe dispersal area.*

408.1.2.5 Temporary holding area. *In buildings protected with automatic sprinklers, corridor serving temporary holding rooms shall be one hour fire resistance rated when the temporary holding occupant load is greater than 20.*

408.1.2.6 Temporary holding facilities. *Temporary holding facilities with nine or fewer persons under restraint may be classified as Group B when located in a buildings complying with all of the following conditions:*

1. *The building shall be protected throughout with a monitored automatic sprinkler system installed in accordance with Section 903.3.1.1.*
2. *The building shall protected with a automatic fire alarm system with notification appliances throughout the holding facility in accordance with Section 907.2.*
3. *The building shall be constructed of Type I, IIA, IIIA or VA construction.*

408.1.2.7 Secure interview rooms. *Secure Interview Rooms used for law enforcement shall be permitted to locked, and shall not be classified as Group I-3 occupancies where all of the following conditions are met:*

1. *A monitored automatic sprinkler system shall be provided throughout buildings and portions thereof including secure interview rooms. The automatic sprinkler system shall comply with Section 903.3.1.1.*
2. *Secure interview rooms shall be located in non-combustible construction.*

3. *Secure interview rooms have glazed or barred openings with direct, continuous observation from law enforcement personnel who have a means to open the secure interview room.*
4. *Not more than 6 occupants in secure interview rooms shall be located in the same fire area.*
5. *An automatic smoke detection system shall be installed within secure interview rooms and mechanical and electrical rooms.*

408.1.3 Security door assemblies in corridors, smoke barriers and smoke partitions. *Security door assemblies shall be constructed in accordance with NFPA 252 or UL 10C, and where a smoke rating is required UL 1784, are not required to be tested or labeled.*

408.2 Other occupancies. Buildings or portions of buildings in Group I-3 occupancies where security operations necessitate the locking of required means of egress shall be permitted to be classified as a different occupancy. Occupancies classified as other than Group I-3 shall meet the applicable requirements of this code for that occupancy where provisions are made for the release of occupants at all times.

Means of egress from detention and correctional occupancies that traverse other use areas shall, as a minimum, conform to requirements for detention and correctional occupancies.

Exceptions:

1. It is permissible to exit through a horizontal exit into other contiguous occupancies that do not conform to detention and correctional occupancy egress provisions but that do comply with requirements set forth in the appropriate occupancy, as long as the occupancy is not a Group H use.
2. *Regardless of the provisions of Section 508, laundry areas and kitchens including associated dining areas, where commercial/institutional equipment is used shall be separated from the remainder of the building by construction capable of resisting the passage of smoke.*
3. *For the purpose of occupancy separation only courtroom docks that are directly accessory to courtrooms need not be separated from a courtroom.*

408.2.1 Correctional medical and mental health uses. *Where a Group I-3 occupancy occurs in building or portions of buildings, the following Subsections of Sections of 407 shall apply: 407.2.1; 407.2.2; 407.2.3; 407.3.1; 407.3.1.1; 407.4; 407.10.*

[BE] 408.3 Means of egress. Except as modified or as provided for in this section, the means of egress provisions of Chapter 10 shall apply.

[BE] 408.3.1 Door width. Doors to resident sleeping units shall have a clear width of not less than 28 inches (711 mm).

408.3.1.1 *Cell doors shall open outwardly or slide laterally.*

[BE] 408.3.2 Sliding doors. Where doors in a means of egress are of the horizontal-sliding type, the force to slide the door to its fully open position shall be not greater than 50 pounds (220 N) with a perpendicular force against the door of 50 pounds (220 N).

[BE] 408.3.3 Guard tower doors. A hatch or trap door not less than 16 square feet (610 m^2) in area through the floor and having dimensions of not less than 2 feet (610 mm) in any direction shall be permitted to be used as a portion of the means of egress from guard towers.

[BE] 408.3.4 Spiral stairways. Spiral stairways that conform to the requirements of Section 1011.10 are permitted for access to and between staff locations.

[BE] 408.3.5 Ship's ladders. Ship's ladders shall be permitted for egress from control rooms or elevated facility observation rooms in accordance with Section 1011.15.

[BE] 408.3.6 Exit discharge. Exits are permitted to discharge into a fenced or walled courtyard. Enclosed yards or courts shall be of a size to accommodate all occupants, be located not less than 50 feet (15 240 mm) from the building and have an area of not less than *7* square feet (*0.65* m^2) per person. *A gate shall be provided from the safe dispersal area to allow for the necessary relocation of occupants.*

408.3.6.1 *Exterior fenced enclosures and fenced enclosures utilized for recreational or activity purposes, used for exit termination for more than 20 persons, and which do not provide a safe dispersal area, shall have not less than two exits.*

408.3.6.2 *Fenced enclosure utilized for recreational or activity purposes only, for more than 49 people, and which do not provide a safe dispersal area, shall be provided with not less than two exits.*

408.3.6.3 *Fenced enclosures located on roofs of buildings one or more stories in height shall be provided with not less than two exits regardless of occupant load.*

408.3.6.4 *Fenced enclosures utilized for central control buildings not normally occupied and not accessed by inmates or the general public are permitted to have only one exit from the fenced enclosure. These fenced enclosures shall only be occupied during emergency response conditions by not more than 29 prison staff occupants. Access to the fenced area shall be controlled remotely or at the gate with a key.*

[BE] 408.3.7 Sallyports. A sallyport shall be permitted in a means of egress where there are provisions for continuous and unobstructed passage through the sallyport during an emergency egress condition.

[BE] 408.3.8 Interior exit stairway and ramp construction. One interior exit stairway or ramp in each building shall be permitted to have glazing installed in doors and interior walls at each landing level providing access to the interior exit stairway or ramp, provided that the following conditions are met:

1. The interior exit stairway or ramp shall not serve more than four floor levels.
2. Exit doors shall be not less than $^3/_4$-hour fire door assemblies complying with Section 716.

3. The total area of glazing at each floor level shall not exceed 5,000 square inches (3.2 m^2) and individual panels of glazing shall not exceed 1,296 square inches (0.84 m^2).
4. The glazing shall be protected on both sides by an automatic sprinkler system. The sprinkler system shall be designed to wet completely the entire surface of any glazing affected by fire when actuated.
5. The glazing shall be in a gasketed frame and installed in such a manner that the framing system will deflect without breaking (loading) the glass before the sprinkler system operates.
6. Obstructions, such as curtain rods, drapery traverse rods, curtains, drapes or similar materials shall not be installed between the automatic sprinklers and the glazing.

408.3.8.1 *Where the number and arrangement of exits complies with the requirements of Chapter 10, other stairways which occur within the secure area of the detention facility and are not used for required exiting but are used primarily for the movement of inmates and security staff need not extend to the exterior.*

408.3.9 Dead-end balconies. *Exit balconies serving cell tiers shall not extend more than 50 feet (15 240 mm) beyond an exit stairway.*

408.3.10 Travel distance. *The travel distance may be increased to 300 feet for portions of Group I-3 occupancies open only to staff or where inmates are escorted at all times by staff.*

408.3.11 Number of exits required. *In temporary holding areas of noncombustible construction, a second means of egress is required when the occupant load is greater than 20.*

408.3.12 Custody station. *Spaces for custody stations, communications and related clerical areas shall be permitted to be open to, or located within the corridor, provided the required construction along the perimeter of the corridor is maintained. Construction of custody stations or portions of custody stations, within the envelope of the corridor, is not required to be fire-resistance rated. These provisions shall also apply to an enclosed custody station within the corridor.*

TABLE 408.3.13—MAXIMUM FLOOR AREA ALLOWANCES FOR I-3 FACILITIES[c]

FUNCTION OF SPACE	OCCUPANT LOAD FACTOR
Detention facilities[a,b]	
Housing pod	*Number of beds and staff*
Refuge area	*6 net*
Safe disposal area	*7 net*
Instructional classroom	*20 net*
Exercise yard or rooms	*50 gross*
Dorms sleeping area	*50 gross*
Holding cell	*10 ft^2 per person/40 ft^2 minimum*
Bench seating	18 inches per person

For SI:1 inch = 25.4 mm, 1 foot = 304.8 mm.

a. Temporary holding cells, rooms or areas shall be calculated based on policies and procedures approved by the authority having jurisdiction. See 408.3.11 for number of exits required.

b. Program rooms, day rooms and recreational yards which are dedicated to a housing pod or unit are not factored into the total occupant load of the building. Exiting from individual rooms shall meet the egress requirements of Chapter 10.

c. Refer to Chapter 10, Section 1004 or elsewhere in the code for specific requirements based on type of detention facility.

[BE] 408.4 Locks. Egress doors are permitted to be locked in accordance with the applicable use condition. Doors from a refuge area to the outside are permitted to be locked with a key in lieu of locking methods described in Section 408.4.1. The keys to unlock the exterior doors shall be available at all times and the locks shall be operable from both sides of the door. *Security hardware may be used on any fire-rated door.*

[BE] 408.4.1 Remote release. Remote release of locks on doors in a means of egress shall be provided with reliable means of operation, remote from the resident living areas, to release locks on all required doors. In Occupancy Condition 3 or 4, the arrangement, accessibility and security of the release mechanisms required for egress shall be such that with the minimum available staff at any time, the lock mechanisms are capable of being released within 2 minutes.

Exception: Provisions for remote locking and unlocking of occupied rooms in Occupancy Condition 4 are not required provided that not more than 10 locks are necessary to be unlocked in order to move occupants from one smoke compartment to a refuge area within 3 minutes. The opening of necessary locks shall be accomplished with not more than two separate keys.

[BE] 408.4.2 Power-operated doors and locks. Power-operated sliding doors or power-operated locks for swinging doors shall be operable by a manual release mechanism at the door. Emergency power shall be provided for the doors and locks in accordance with Section 2702.

Exceptions:

1. Emergency power is not required in facilities with 10 or fewer locks complying with the exception to Section 408.4.1.
2. Emergency power is not required where remote mechanical operating releases are provided.

[BE] 408.4.3 Redundant operation. Remote release, mechanically operated sliding doors or remote release, mechanically operated locks shall be provided with a mechanically operated release mechanism at each door, *and* shall be provided with a redundant remote release control.

[BE] 408.4.4 Relock capability. Doors remotely unlocked under emergency conditions shall not automatically relock when closed unless specific action is taken at the remote location to enable doors to relock.

408.5 Protection of vertical openings. Any vertical opening shall be protected by a shaft enclosure in accordance with Section 713, or shall be in accordance with Section 408.5.1.

408.5.1 Floor openings. *The open space in front of a cell tier and connected chases, not exceeding two tiers in height, shall not be considered a vertical shaft and need not meet the fire-resistive shaft enclosure requirements of Section 713.*

408.5.2 Shaft openings in communicating floor levels. Where a floor opening is permitted between communicating floor levels of a housing unit in accordance with Section 408.5.1, plumbing chases serving vertically stacked individual cells contained with the housing unit shall be permitted without a shaft enclosure.

[BE] 408.6 Smoke barrier. Occupancies in Group I-3 shall have smoke barriers complying with Sections 408.6 and 709 to divide every story occupied by residents for sleeping, or any other story having an occupant load of 50 or more persons, into not fewer than two smoke compartments.

Exception: Spaces having a direct exit to one of the following, provided that the locking arrangement of the doors involved complies with the requirements for doors at the smoke barrier for the use condition involved:

1. A public way.
2. A building separated from the resident housing area by a 2-hour fire-resistance-rated assembly or 50 feet (15 240 mm) of open space.
3. A secured yard or court having a holding space 50 feet (15 240 mm) from the housing area that provides 6 square feet (0.56 m^2) or more of refuge area per occupant, including residents, staff and visitors.
4. *Holding facility.*

[BE] 408.6.1 Smoke compartments. The number of residents in any smoke compartment shall be not more than 200. The distance of travel to a door in a smoke barrier from any room door required as exit access shall be not greater than 150 feet (45 720 mm). The distance of travel to a door in a smoke barrier from any point in a room shall be not greater than 200 feet (60 960 mm).

Exception: *The travel distance may be increased by 50 feet from areas open only to the staff.*

[BE] 408.6.2 Refuge area. Not less than 6 net square feet (0.56 m^2) per occupant shall be provided on each side of each smoke barrier for the total number of occupants in adjoining smoke compartments. This space shall be readily available wherever the occupants are moved across the smoke barrier in a fire emergency.

[BE] 408.6.3 Independent egress. A means of egress shall be provided from each smoke compartment created by smoke barriers without having to return through the smoke compartment from which means of egress originates.

408.7 Security glazing. In occupancies in Group I-3, windows and doors in 1-hour fire barriers constructed in accordance with Section 707, fire partitions constructed in accordance with Section 708 and smoke barriers constructed in accordance with Section 709 shall be permitted to have security glazing installed provided that the following conditions are met.

1. Individual panels of glazing shall not exceed 1,296 square inches (0.84 m^2).
2. The glazing shall be protected on both sides by an automatic sprinkler system. The sprinkler system shall be designed to, when actuated, wet completely the entire surface of any glazing affected by fire.
3. The glazing shall be in a gasketed frame and installed in such a manner that the framing system will deflect without breaking (loading) the glass before the sprinkler system operates.
4. Obstructions, such as curtain rods, drapery traverse rods, curtains, drapes or similar materials shall not be installed between the automatic sprinklers and the glazing.

408.8 Subdivision of resident housing areas. Sleeping areas and any contiguous day room, group activity space or other common spaces where residents are housed shall be separated from other spaces in accordance with Sections 408.8.1 through 408.8.4.

408.8.1 Occupancy Conditions 3 and 4. Each sleeping area in Occupancy Conditions 3 and 4 shall be separated from the adjacent common spaces by a smoke-tight partition where the distance of travel from the sleeping area through the common space to the corridor exceeds 50 feet (15 240 mm).

408.8.2 Occupancy Condition 5. Each sleeping area in Occupancy Condition 5 shall be separated from adjacent sleeping areas, corridors and common spaces by a smoke-tight partition. Additionally, common spaces shall be separated from the corridor by a smoke-tight partition.

408.8.3 Openings in room face. The aggregate area of openings in a solid sleeping room face in Occupancy Conditions 2, 3, 4 and 5 shall not exceed 120 square inches (0.77 m^2). The aggregate area shall include all openings including door undercuts, food passes and grilles. Openings shall be not more than 36 inches (914 mm) above the floor. In Occupancy Condition 5, the openings shall be closeable from the room side.

408.8.4 Smoke-tight doors. Doors in openings in partitions required to be smoke tight by Section 408.8 shall be substantial doors, of construction that will resist the passage of smoke. Latches and door closers are not required on cell doors.

408.9 Windowless buildings. For the purposes of this section, a windowless building or portion of a building is one with nonopenable windows, windows not readily breakable or without windows. Windowless buildings shall be provided with an engineered smoke control system to provide a tenable environment for exiting from the smoke compartment in the area of fire origin in accordance with Section 909 for each windowless smoke compartment.

408.9.1 Smoke venting. *The housing portions of windowless buildings containing use conditions 3, 4, 5 or 9 shall be provided with an engineered smoke control system in accordance with Section 909, windows or doors, smoke vents or equivalent means to provide a tenable environment for exiting from the smoke compartment in the area of fire origin. A tenable environment for egress shall be as defined in NFPA 92. If windows, smoke vents or doors are used to meet this section, at least two windows, smoke vents or doors to the exterior must be provided at or above the highest occupied level in each housing pod, and the windows or doors must be operable or readily breakable and arranged to manually vent smoke.*

Exceptions:

1. *Windowless buildings or portions of a building that meet all of the following requirements:*
   - *1.1. Are Type IA or IB construction.*
   - *1.2. Are protected with sprinklers throughout in accordance with Section 903.3.1.1.*
   - *1.3. Include a fire alarm system with smoke detection in accordance with NFPA 72 in the dayroom and/or corridor serving as exit access from the cells, reporting to a 24 hour central control at the institution.*
   - *1.4. Include at least one exit from each housing unit direct to the exterior where smoke will not accumulate or to the exterior through a 1-hour-rated corridor serving only that unit.*
   - *1.5. The building is divided into at least two smoke compartments per Section 408.6.1.*
   - *1.6. As approved by the enforcing agency, an egress analysis shows that inmates can be evacuated within 6 minutes from the smoke compartment of origin 24 hours per day or when inmates are present.*
2. *No venting or smoke control is required when an engineering analysis shows an acceptable safe egress time compared to the onset of untenable conditions within a windowless building or portion of a windowless building and approved by the enforcing agency. (See Section 909.4.)*

[F] 408.10 Fire alarm system. A fire alarm system shall be provided in accordance with Section 907.2.6.3.

[F] 408.11 Automatic sprinkler system. Group I-3 occupancies shall be equipped throughout with an automatic sprinkler system in accordance with Section 903.2.6.

408.12 Emergency and standby power systems. *Special electrical systems, exit illumination, power installations and alternate on-site electrical supplies shall be provided for every building or portion of a building housing 10 or more inmates in a detention or correctional facility in accordance with the provisions of the California Electrical Code. There shall be a source of emergency power in all detention facilities capable of providing minimal lighting in all housing units, activity areas, corridors, stairs and central control points, and to maintain fire and life safety, security, communications and alarm systems.*

408.13 Windows. *In security areas within cell complexes sprinklered throughout, the area of glazing in one-hour corridor walls and smoke barrier walls shall not be restricted, provided:*

1. *All openings are protected by fixed glazing listed and labeled for a fire-protection of at least $^{3}/_{4}$ hour; or*
2. *Fixed security glazing set in noncombustible frames. Shall comply with the minimum requirements of one of the following test standards: ASTM F1915 Grade 3 glass or H.P. White Laboratory, Inc., HPW-TP- 0500.02, Forced Entry Level III.*
2. *In lieu of the sizes set forth in CBC, the size and area of glazed assemblies shall conform to the following: Windows required to have a three-fourths-hour fire-resistive rating or windows protected by fixed security glazing, as delineated in Items 1 and 2 above, may have an area not greater than 84 square feet (7.8 m^2) with neither width nor height exceeding 12 feet (3658 mm).*

408.14 Safety padding. *Padding material used on walls, floors and ceilings in Group I and R-2.1 occupancies shall be of an approved type tested in accordance with the procedures established by State Fire Marshal Standard 12-8-100, Room Fire Test for Wall and Ceiling Materials, California Code of Regulations, Title 24, Part 12.*

408.15 Small management yards.

408.15.1 General. *The provisions of Sections 408.15.1 through 408.15.5 shall apply to small management yards. Small management yards may be used by a maximum of two occupants at any one time for a maximum of 2 hours per day.*

408.15.2 Construction. *Small management yards shall be constructed in accordance with all of the following:*

1. *Constructed of Type IB noncombustible materials.*
2. *Fence material shall be noncombustible.*
3. *Have a maximum area of 150 square feet (14 m^2).*
4. *Yard area covering shall not exceed 75 square feet (7 m^2) or a maximum of 50 percent of the fenced enclosure.*
5. *Electrical lighting or devices of any type shall not be permitted within the yard.*

   Exception: *Low voltage devices dedicated for the operation of toilets.*

408.15.3 Fire protection system provisions.

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408.15.3.1 Automatic sprinkler systems. *An automatic sprinkler system shall be provided in accordance with Section 903.3.1.1.*

Exception: *Small management yards where a distance of 10 feet (3048 mm) is maintained from all buildings or structures and 4 feet (1220 mm) is maintained from containment fencing.*

408.15.3.2 Fire alarm systems. *An approved fire alarm system shall be provided in accordance with Section 907.*

Exception: *Small management yards where a distance of 10 feet (3048 mm) is maintained from all buildings or structures and 4 feet (1220 mm) is maintained from containment fencing.*

408.15.4 Means of egress. *Except as modified or as provided for in this section, the provisions of Section 408.3 and Chapter 10 shall apply. Small management yards shall comply with all of the following:*

1. *Staff-controlled manual released locks shall be provided.*
2. *Staff escorting inmates to and from small management yards shall be equipped with radios and personal alarms to notify central control in case of a fire.*
3. *The safe dispersal area as defined by Section 1027.5 shall not be reduced due to placement of these yards.*
4. *An exit, remote from the main entrance is required in the containment fencing.*

408.15.5 Special provisions. *Inmate exercise clothing and toilet paper tissue shall be the only combustible materials permitted in small management yards.*

408.16. Vehicle sallyports. *A 2-hour fire barrier separation is required at vehicle sallyports. Where a sallyport roof is more than 50 percent open to the sky, no fire barrier separation is required. Solid roofs in sallyports shall be sprinklered complying with Section 903.2.6.2.*

SECTION 409—MOTION PICTURE PROJECTION ROOMS

409.1 General. The provisions of Sections 409.1 through 409.5 shall apply to rooms in which ribbon-type cellulose acetate or other safety film is utilized in conjunction with electric arc, xenon or other light-source projection equipment that develops hazardous gases, dust or radiation. Where cellulose nitrate film is utilized or stored, such rooms shall comply with NFPA 40.

409.1.1 Projection room required. Every motion picture machine projecting film as mentioned within the scope of this section shall be enclosed in a projection room. Appurtenant electrical equipment, such as rheostats, transformers and generators, shall be within the projection room or in an adjacent room of equivalent construction.

409.2 Construction of projection rooms. Every projection room shall be of permanent construction consistent with the construction requirements for the type of building in which the projection room is located. Openings are not required to be protected.

The room shall have a floor area of not less than 80 square feet (7.44 m^2) for a single machine and not less than 40 square feet (3.7 m^2) for each additional machine. Each motion picture projector, floodlight, spotlight or similar piece of equipment shall have a clear working space of not less than 30 inches by 30 inches (762 mm by 762 mm) on each side and at the rear thereof, but only one such space shall be required between two adjacent projectors. The projection room and the rooms appurtenant thereto shall have a ceiling height of not less than 7 feet 6 inches (2286 mm). The aggregate of openings for projection equipment shall not exceed 25 percent of the area of the wall between the projection room and the auditorium. Openings shall be provided with glass or other approved material, so as to close completely the opening.

409.3 Projection room and equipment ventilation. Ventilation shall be provided in accordance with the *California Mechanical Code.*

409.3.1 Supply air. Each projection room shall be provided with adequate air supply inlets so arranged as to provide well-distributed air throughout the room. Air inlet ducts shall provide an amount of air equivalent to the amount of air being exhausted by projection equipment. Air is permitted to be taken from the outside; from adjacent spaces within the building, provided that the volume and infiltration rate are sufficient; or from the building air-conditioning system, provided that it is so arranged as to provide sufficient air when other systems are not in operation.

409.3.2 Exhaust air. Projection rooms are permitted to be exhausted through the lamp exhaust system. The lamp exhaust system shall be positively interconnected with the lamp so that the lamp will not operate unless there is the required airflow. Exhaust air ducts shall terminate at the exterior of the building in such a location that the exhaust air cannot be readily recirculated into any air supply system. The projection room ventilation system is permitted to also serve appurtenant rooms, such as the generator and rewind rooms.

409.3.3 Projection machines. Each projection machine shall be provided with an exhaust duct that will draw air from each lamp and exhaust it directly to the outside of the building. The lamp exhaust is permitted to serve to exhaust air from the projection room to provide room air circulation. Such ducts shall be of rigid materials, except for a flexible connector approved for the purpose. The projection lamp or projection room exhaust system, or both, is permitted to be combined but shall not be interconnected with any other exhaust or return system, or both, within the building.

409.4 Lighting control. Provisions shall be made for control of the auditorium lighting and the means of egress lighting systems of theaters from inside the projection room and from not less than one other convenient point in the building.

409.5 Miscellaneous equipment. Each projection room shall be provided with rewind and film storage facilities.

SECTION 410—STAGES, PLATFORMS AND TECHNICAL PRODUCTION AREAS

410.1 Applicability. The provisions of Sections 410.1 through 410.6 shall apply to all parts of buildings and structures that contain stages or platforms and similar appurtenances as herein defined.

410.2 Stages. Stage construction shall comply with Sections 410.2.1 through 410.2.7.

410.2.1 Stage construction. Stages shall be constructed of materials as required for floors for the type of construction of the building in which such stages are located.

Exception: Stages need not be constructed of the same materials as required for the type of construction provided that the construction complies with one of the following:

1. Stages of Type IIB or IV construction with a nominal 2-inch (51 mm) wood deck, provided that the stage is separated from other areas in accordance with Section 410.2.4.
2. In buildings of Type IIA, IIIA and VA construction, a fire-resistance-rated floor is not required, provided that the space below the stage is equipped with an automatic sprinkler system or fire-extinguishing system in accordance with Section 903 or 904.
3. In all types of construction, the finished floor shall be constructed of wood or approved noncombustible materials. Openings through stage floors shall be equipped with tight-fitting, solid wood trap doors with approved safety locks.

410.2.1.1 Stage height and area. Stage areas shall be measured to include the entire performance area and adjacent backstage and support areas not separated from the performance area by fire-resistance-rated construction. Stage height shall be measured from the lowest point on the stage floor to the highest point of the underside of the roof or floor deck above the stage.

410.2.2 Technical production areas: galleries, gridirons and catwalks. Beams designed only for the attachment of portable or fixed theater equipment, gridirons, galleries and catwalks shall be constructed of approved materials consistent with the requirements for the type of construction of the building; and a fire-resistance rating shall not be required. These areas shall not be considered to be floors, stories, mezzanines or levels in applying this code.

Exception: Floors of fly galleries and catwalks shall be constructed of any approved material.

410.2.3 Exterior stage doors. Where protection of openings is required, exterior exit doors shall be protected with fire door assemblies that comply with Section 716. Exterior openings that are located on the stage for means of egress or loading and unloading purposes, and that are likely to be open during occupancy of the theater, shall be constructed with vestibules to prevent air drafts into the auditorium.

410.2.4 Proscenium wall. Where the stage height is greater than 50 feet (15 240 mm), all portions of the stage shall be completely separated from the seating area by a proscenium wall with not less than a 2-hour fire-resistance rating extending continuously from the foundation to the roof.

Exception: Where a stage is located in a building of Type I construction, the proscenium wall is permitted to extend continuously from a minimum 2-hour fire-resistance-rated floor slab of the space containing the stage to the roof or a minimum 2-hour fire-resistance-rated floor deck above.

410.2.5 Proscenium curtain. Where a proscenium wall is required to have a fire-resistance rating, the stage opening shall be provided with a fire curtain complying with NFPA 80, horizontal sliding doors complying with Section 716 having a fire protection rating of not less than 1 hour, or an approved water curtain complying with Section 903.3.1.1 or, in facilities not utilizing the provisions of smoke-protected assembly seating in accordance with Section 1030.6.2, a smoke control system complying with Section 909 or natural ventilation designed to maintain the smoke level not less than 6 feet (1829 mm) above the floor of the means of egress.

410.2.6 Scenery. Combustible materials used in sets and scenery *shall be flame resistant in accordance with the provisions set forth in CCR, Title 19, Division 1, Chapter 8,* in accordance with Section 806 and the *California Fire Code*. Foam plastics and materials containing foam plastics shall comply with Section 2603 and the *California Fire Code.*

410.2.7 Stage ventilation. Emergency ventilation shall be provided for stages larger than 1,000 square feet (93 m^2) in floor area, or with a stage height greater than 50 feet (15 240 mm). Such ventilation shall comply with Section 410.2.7.1 or 410.2.7.2.

410.2.7.1 Roof vents. Two or more vents constructed to open automatically by approved heat-activated devices and with an aggregate clear opening area of not less than 5 percent of the area of the stage shall be located near the center and above the highest part of the stage area. Supplemental means shall be provided for manual operation of the ventilator. Curbs shall be provided as required for skylights in Section 2610.2. Vents shall be labeled.

[F] 410.2.7.2 Smoke control. Smoke control in accordance with Section 909 shall be provided to maintain the smoke layer interface not less than 6 feet (1829 mm) above the highest level of the assembly seating or above the top of the proscenium opening where a proscenium wall is provided in compliance with Section 410.2.4.

410.3 Platform construction. Permanent platforms shall be constructed of materials as required for the type of construction of the building in which the permanent platform is located. Permanent platforms are permitted to be constructed of fire-retardant-treated wood for Types I, II and IV construction where the platforms are not more than 30 inches (762 mm) above the main floor, and not more than one-third of the room floor area and not more than 3,000 square feet (279 m^2) in area. Where the space beneath the permanent platform is used for storage or any purpose other than equipment, wiring or plumbing, the floor assembly shall be not less than 1-hour fire-resistance-rated construction. Where the space beneath the permanent platform is used only for equipment, wiring or plumbing, the underside of the permanent platform need not be protected.

410.3.1 Temporary platforms. Platforms installed for a period of not more than 30 days are permitted to be constructed of any materials permitted by this code. The space between the floor and the platform above shall only be used for plumbing and electrical wiring to platform equipment.

410.4 Dressing and appurtenant rooms. Dressing and appurtenant rooms shall comply with Sections 410.4.1 and 410.4.2.

410.4.1 Separation from stage. The stage shall be separated from dressing rooms, scene docks, property rooms, workshops, storerooms and compartments contiguous to the stage and other parts of the building by fire barriers constructed in accordance with Section 707 or horizontal assemblies constructed in accordance with Section 711, or both. The fire-resistance rating shall be not less than 2 hours for stage heights greater than 50 feet (15 240 mm) and not less than 1 hour for stage heights of 50 feet (15 240 mm) or less.

410.4.2 Separation from each other. Dressing rooms, scene docks, property rooms, workshops, storerooms and compartments contiguous to the stage shall be separated from each other by not less than 1-hour fire barriers constructed in accordance with Section 707 or horizontal assemblies constructed in accordance with Section 711, or both.

[BE] 410.5 Means of egress. Except as modified or as provided for in this section, the provisions of Chapter 10 shall apply.

[BE] 410.5.1 Arrangement. Where two or more exits or exit access doorways from the stage are required in accordance with Section 1006.2, not fewer than one exit or exit access doorway shall be provided on each side of a stage.

[BE] 410.5.2 Stairway and ramp enclosure. Exit access stairways and ramps serving a stage or platform are not required to be enclosed. Exit access stairways and ramps serving technical production areas are not required to be enclosed.

[BE] 410.5.3 Technical production areas. Technical production areas shall be provided with means of egress and means of escape in accordance with Sections 410.5.3.1 through 410.5.3.5.

[BE] 410.5.3.1 Number of means of egress. Not fewer than one means of egress shall be provided from technical production areas.

[BE] 410.5.3.2 Exit access travel distance. The exit access travel distance shall be not greater than 300 feet (91 440 mm) for buildings without an automatic sprinkler system and 400 feet (122 mm) for buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.

[BE] 410.5.3.3 Two means of egress. Where two means of egress are required, the common path of travel shall be not greater than 100 feet (30 480 mm).

Exception: A means of escape to a roof in place of a second means of egress is permitted.

[BE] 410.5.3.4 Path of egress travel. The following exit access components are permitted where serving technical production areas:

1. Stairways.
2. Ramps.
3. Spiral stairways.
4. Catwalks.
5. Alternating tread devices.
6. Permanent ladders.

[BE] 410.5.3.5 Width. The path of egress travel within and from technical support areas shall be not less than 22 inches (559 mm).

[F] 410.6 Automatic sprinkler system. Stages shall be equipped with an automatic sprinkler system in accordance with Section 903.3.1.1. Sprinklers shall be installed under the roof and gridiron and under all catwalks and galleries over the stage. Sprinklers shall be installed in dressing rooms, performer lounges, shops and storerooms accessory to such stages.

Exceptions:

1. Sprinklers are not required under stage areas less than 4 feet (1219 mm) in clear height that are utilized exclusively for storage of tables and chairs, provided that the concealed space is separated from the adjacent spaces by Type X gypsum board not less than $^{5}/_{8}$-inch (15.9 mm) in thickness.
2. Sprinklers are not required for stages 1,000 square feet (93 m^2) or less in area and 50 feet (15 240 mm) or less in height where curtains, scenery or other combustible hangings are not retractable vertically. Combustible hangings shall be limited to a single main curtain, borders, legs and a single backdrop.
3. Sprinklers are not required within portable orchestra enclosures on stages.
4. Sprinklers are not required under catwalks and galleries where they are permitted to be omitted in accordance with Section 903.3.1.1.

SECTION 411—SPECIAL AMUSEMENT AREAS

411.1 General. Special amusement areas having an occupant load of 50 or more shall comply with the requirements for the appropriate Group A occupancy and Sections 411.1 through 411.6. Special amusement areas having an occupant load of less than 50 shall comply with the requirements for a Group B occupancy and Sections 411.1 through 411.6.

Exceptions:

1. Special amusement areas that are without walls or a roof and constructed to prevent the accumulation of smoke are not required to comply with this section.

2. Puzzle rooms provided with a means of egress that is unlocked, readily identifiable and always available are not required to comply with this section.

[F] 411.2 Automatic sprinkler system. Buildings containing special amusement areas shall be equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1. Where the special amusement area is temporary, *less than 180 days,* the sprinkler water supply shall be of an approved temporary means *determined by the authority having jurisdiction.*

Exception: Automatic sprinklers are not required where the total floor area of a temporary, *less than 180 days,* special amusement area is less than 1,000 square feet (93 m^2) and the exit access travel distance from any point in the special amusement area to an exit is less than 50 feet (15 240 mm).

[F] 411.3 Detection and alarm systems. Buildings containing special amusement areas shall be equipped throughout with an automatic smoke detection system and an emergency voice/alarm communications system in accordance with Section 907. Presignal alarms and alarm activation shall comply with Sections 411.3.1 and 411.3.2. Emergency voice/alarm communications systems shall comply with Section 411.3.3.

[F] 411.3.1 Alarm presignal. Activation of any single smoke detector, the automatic sprinkler system or any other single automatic fire-detection device shall immediately initiate an audible and visible alarm at a constantly attended location at the special amusement area from which emergency action, including the manual requirements in Section 411.3.2, can be initiated.

[F] 411.3.2 Alarm activation. Activation of two or more smoke detectors, a single smoke detector equipped with an alarm verification feature, two or more other approved fire detection devices, the automatic sprinkler system, or a manual control located at the constantly attended station required by Section 411.3.1 shall automatically accomplish all of the following:

1. Illumination of the means of egress with an illumination level not less than 1 footcandle (11 lux) at the walking surface level.
2. Cessation of conflicting or confusing sounds and visual distractions.
3. Activation of approved directional exit markings.
4. Activation of a prerecorded message, audible throughout the special amusement area, instructing occupants to proceed to the nearest exit. Alarm signals used in conjunction with the prerecorded message shall produce a sound that is distinct from other sounds used during normal operation of the special amusement area.

[F] 411.3.3 Emergency voice/alarm communications system. An emergency voice/alarm communications system complying with Section 907.5.2.2 shall be installed in and audible throughout special amusement areas. The emergency voice/alarm communications system is allowed to also serve as a public address system.

[BE] 411.4 Exit marking. Exit signs shall be installed at the required exit or exit access doorways serving special amusement areas in accordance with this section and Section 1013. Approved directional exit markings shall be provided. Where mirrors, mazes or other designs disguise the path of egress travel such that the path of egress travel is not apparent, approved and listed low-level exit signs that comply with Section 1013.5, and directional path markings listed in accordance with UL 1994, shall be provided and located not more than 8 inches (203 mm) above the walking surface and on or near the path of egress travel. Such markings shall become visible in an emergency. The directional exit marking shall be activated by the automatic smoke detection system and the automatic sprinkler system in accordance with Section 411.3.2.

[BE] 411.4.1 Photoluminescent exit signs. Where photoluminescent exit signs are installed, such signs shall be listed and the activating light source and viewing distance shall be in accordance with the listing and markings on the signs.

411.5 Interior finish. Interior wall and ceiling finish materials in special amusement areas shall meet the flame spread index and smoke-developed index requirements for Class A in accordance with Section 803.1.

411.6 Flammable decorative materials. Flammable decorative materials shall comply with Section 806.

SECTION 412—AIRCRAFT-RELATED OCCUPANCIES

412.1 General. Aircraft-related occupancies shall comply with Sections 412.1 through 412.7 and the *California Fire Code*.

412.2 Airport traffic control towers. The provisions of Sections 412.2.1 through 412.2.6 shall apply to airport traffic control towers occupied only for the following uses:

1. Airport traffic control cab.
2. Electrical and mechanical equipment rooms.
3. Airport terminal radar and electronics rooms.
4. Office spaces incidental to the tower operation.
5. Lounges for employees, including sanitary facilities.

412.2.1 Construction. The construction of airport traffic control towers shall comply with the provisions of Sections 412.2.1.1 through 412.2.1.3.

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412.2.1.1 Type of construction. Airport traffic control towers shall be constructed to comply with the height limitations of Table 412.2.1.1.

TABLE 412.2.1.1—HEIGHT LIMITATIONS FOR AIRPORT TRAFFIC CONTROL TOWERS

TYPE OF CONSTRUCTION	HEIGHT[a] (feet)
IA	Unlimited
IB	240
IIA	100
IIB	85
IIIA	65

For SI: 1 foot = 304.8 mm, 1 square foot = 0.0929 m^2.
a. Height to be measured from grade plane to cab floor.

[BS] 412.2.1.2 Structural integrity of interior exit stairways and elevator hoistway enclosures. Enclosures for interior exit stairways and elevator hoistway enclosures shall comply with Section 403.2.2 in airport traffic control towers where the control cab is located more than 75 feet (22 860 mm) above the lowest level of fire department vehicle access.

[BS] 412.2.1.3 Sprayed fire-resistive materials (SFRM). The bond strength of the SFRM installed in airport traffic control towers shall be in accordance with Section 403.2.3 where the control cab is located more than 75 feet (22 860 mm) above the lowest level of fire department vehicle access.

[BE] 412.2.2 Means of egress and evacuation. The means of egress in airport traffic control towers shall comply with Sections 412.2.2.1 through 412.2.2.3.

[BE] 412.2.2.1 Stairways. Stairways in airport traffic control towers shall be in accordance with Section 1011. Exit stairways shall be smokeproof enclosures complying with one of the alternatives provided in Section 909.20.

Exception: Stairways in airport traffic control towers are not required to comply with Section 1011.12.

[BE] 412.2.2.2 Exit access. From observation levels, airport traffic control towers shall be permitted to have a single means of exit access for a distance of travel not greater than 100 feet (30 480 mm). Exit access stairways from the observation level need not be enclosed.

[BE] 412.2.2.3 Number of exits. Not less than one exit stairway shall be permitted for airport traffic control towers of any height provided that the occupant load per floor is not greater than 15 and the area per floor does not exceed 1,500 square feet (140 m^2).

[BE] 412.2.2.3.1 Interior finish. Where an airport traffic control tower is provided with only one exit stairway, interior wall and ceiling finishes shall be either Class A or Class B.

[BE] 412.2.2.3.2 Exit separation. Where an airport traffic control tower is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 and two exits are required, the exit separation distance required by Section 1007 shall be not less than one-fourth of the length of the maximum overall dimension of the area served.

[F] 412.2.3 Emergency systems. The detection, alarm and emergency systems of airport traffic control towers shall comply with Sections 412.2.3.1 through 412.2.3.3.

[F] 412.2.3.1 Automatic smoke detection systems. Airport traffic control towers shall be provided with an automatic smoke detection system installed in accordance with Section 907.2.22.

[F] 412.2.3.2 Fire command center. A fire command center shall be provided in airport traffic control towers where the control cab is located more than 75 feet (22 860 mm) above the lowest level of fire department vehicle access. The fire command center shall comply with Section 911.

Exceptions:

1. The fire command center shall be located in the airport control tower or an adjacent contiguous building where building functions are interdependent.
2. The room shall be not less than 150 square feet (14 m^2) in area with a minimum dimension of 10 feet (3048 mm).
3. The following features shall not be required in an airport traffic control tower fire command center.
    - 3.1. Emergency voice/alarm control unit.
    - 3.2. Public address system.
    - 3.3. Status indicators and controls for the air distributions centers.
    - 3.4. Generator supervision devices, manual start and transfer features.
    - 3.5. Elevator emergency or standby power switches where emergency or standby power is provided.

[F] 412.2.3.3 Smoke removal. Smoke removal in airport traffic control towers shall be provided in accordance with Section 403.4.7.

[F] 412.2.4 Automatic sprinkler system. Where an occupied floor is located more than 35 feet (10 668 mm) above the lowest level of fire department vehicle access, airport traffic control towers shall be equipped with an automatic sprinkler system in accordance with Section 903.3.1.1.

[F] 412.2.4.1 Fire pump room. Fire pumps shall be located in rooms that are separated from all other areas of the building by 2-hour fire barriers constructed in accordance with Section 707 or 2-hour horizontal assemblies constructed in accordance with Section 711, or both.

Exception: Separation is not required for fire pumps physically separated in accordance with NFPA 20.

[F] 412.2.5 Protection of elevator wiring and cables. Wiring and cables serving elevators in airport traffic control towers shall be protected in accordance with Section 3007.8.1.

[F] 412.2.5.1 Elevators for occupant evacuation. Where provided in addition to an exit stairway, occupant evacuation elevators shall be in accordance with Section 3008.

[BE] 412.2.6 Accessibility. ***[DSA-AC]*** *In air traffic control towers, an accessible route shall not be required to serve the cab and the equipment areas on the floor immediately below the cab.*

412.3 Aircraft hangars. Aircraft hangars shall be in accordance with Sections 412.3.1 through 412.3.6.

412.3.1 Exterior walls. Exterior walls located less than 30 feet (9144 mm) from lot lines or a public way shall have a fire-resistance rating not less than 2 hours.

412.3.2 Basements. Where hangars have basements, floors over basements shall be of Type IA construction and shall be made tight against seepage of water, oil or vapors. There shall not be openings or communication between basements and the hangar. Access to basements shall be from outside only.

412.3.3 Floor surface. Floors shall be graded and drained to prevent water or fuel from remaining on the floor. Floor drains shall discharge through an oil separator to the sewer or to an outside vented sump.

Exception: Aircraft hangars with individual lease spaces not exceeding 2,000 square feet (186 m^2) each in which servicing, repairing or washing is not conducted and fuel is not dispensed shall have floors that are graded toward the door, but shall not require a separator.

412.3.4 Heating equipment. Heating equipment shall be placed in another room separated by 2-hour fire barriers constructed in accordance with Section 707 or horizontal assemblies constructed in accordance with Section 711, or both. Entrance shall be from the outside or by means of a vestibule providing a two-doorway separation.

Exceptions:

1. Unit heaters and vented infrared radiant heating equipment suspended not less than 10 feet (3048 mm) above the upper surface of wings or engine enclosures of the highest aircraft that are permitted to be housed in the hangar need not be located in a separate room provided that they are mounted not less than 8 feet (2438 mm) above the floor in shops, offices and other sections of the hangar communicating with storage or service areas.
2. Entrance to the separated room shall be permitted by a single interior door provided that the sources of ignition in the appliances are not less than 18 inches (457 mm) above the floor.

412.3.5 Finishing. The process of "doping," involving use of a volatile flammable solvent, or of painting, shall be carried on in a separate detached building equipped with automatic fire-extinguishing equipment in accordance with Section 903.

[F] 412.3.6 Fire suppression. Aircraft hangars shall be provided with a fire suppression system designed in accordance with NFPA 409, based on the classification for the hangar given in Table 412.3.6.

Exception: Where a fixed base operator has separate repair facilities on site, Group II hangars operated by a fixed base operator used for storage of transient aircraft only shall have a fire suppression system, but the system is exempt from foam requirements.

[F] TABLE 412.3.6—HANGAR FIRE SUPPRESSION REQUIREMENTS[a, b, c]

MAXIMUM SINGLE FIRE AREA (square feet)	TYPE OF CONSTRUCTION								
	IA	IB	IIA	IIB	IIIA	IIIB	IV	VA	VB
≥ 40,001	Group I	Group I	Group I	Group I	Group I	Group I	Group I	Group I	Group I
40,000	Group II	Group II	Group II	Group II	Group II	Group II	Group II	Group II	Group II
30,000	Group III	Group II	Group II	Group II	Group II	Group II	Group II	Group II	Group II
20,000	Group III	Group III	Group II	Group II	Group II	Group II	Group II	Group II	Group II
15,000	Group III	Group III	Group III	Group II	Group III	Group II	Group III	Group II	Group II
12,000	Group III	Group III	Group III	Group III	Group III	Group III	Group III	Group II	Group II
8,000	Group III	Group III	Group III	Group III	Group III	Group III	Group III	Group III	Group II
5,000	Group III	Group III	Group III	Group III	Group III	Group III	Group III	Group III	Group III

For SI: 1 foot = 304.8 mm, 1 square foot = 0.0929 m^2.

a. Aircraft hangars with a door height greater than 28 feet shall be provided with fire suppression for a Group I hangar regardless of maximum fire area.

b. Groups shall be as classified in accordance with NFPA 409.

c. Membrane *structures* complying with Section 3102 shall be classified as a Group IV hangar.

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[F] 412.3.6.1 Hazardous operations. Any Group III aircraft hangar according to Table 412.3.6 that contains hazardous operations including, but not limited to, the following shall be provided with a Group I or II fire suppression system in accordance with NFPA 409 as applicable:

1. Doping.
2. Hot work including, but not limited to, welding, torch cutting and torch soldering.
3. Fuel transfer.
4. Fuel tank repair or maintenance not including defueled tanks in accordance with NFPA 409, inerted tanks or tanks that have never been fueled.
5. Spray finishing operations.
6. Total fuel capacity of all aircraft within the unsprinklered single fire area in excess of 1,600 gallons (6057 L).
7. Total fuel capacity of all aircraft within the maximum single fire area in excess of 7,500 gallons (28 390 L) for a hangar with an automatic sprinkler system in accordance with Section 903.3.1.1.

[F] 412.3.6.2 Separation of maximum single fire areas. Maximum single fire areas established in accordance with hangar classification and construction type in Table 412.3.6 shall be separated by 2-hour fire walls constructed in accordance with Section 706. In determining the maximum single fire area as set forth in Table 412.3.6, ancillary uses that are separated from aircraft servicing areas by a fire barrier of not less than 1 hour, constructed in accordance with Section 707, shall not be included in the area.

412.4 Residential aircraft hangars. Residential aircraft hangars shall comply with Sections 412.4.1 through 412.4.5.

412.4.1 Fire separation. A hangar shall not be attached to a dwelling unless separated by a fire barrier having a fire-resistance rating of not less than 1 hour. Such separation shall be continuous from the foundation to the underside of the roof and unpierced except for doors leading to the dwelling unit. Doors into the dwelling unit shall be equipped with self-closing devices and conform to the requirements of Section 716 with a noncombustible raised sill not less than 4 inches (102 mm) in height. Openings from a hangar directly into a room used for sleeping purposes shall not be permitted.

[BE] 412.4.2 Egress. A hangar shall provide two means of egress. One of the doors into the dwelling shall be considered as meeting only one of the two means of egress.

[F] 412.4.3 Smoke alarms. Smoke alarms shall be provided within the hangar in accordance with Section 907.2.22.

412.4.4 Independent systems. Electrical, mechanical and plumbing drain, waste and vent (DWV) systems installed within the hangar shall be independent of the systems installed within the dwelling. Building sewer lines shall be permitted to be connected outside the structures.

Exception: Smoke detector wiring and feed for electrical subpanels in the hangar.

412.4.5 Height and area limits. Residential aircraft hangars shall be not greater than 2,000 square feet (186 m^2) in area and 20 feet (6096 mm) in building height.

[F] 412.5 Aircraft paint hangars. Aircraft painting operations shall be conducted in an aircraft paint hangar that complies with the provisions of Sections 412.5.1 through 412.5.8. Buildings and structures, or parts thereof, used for the application of flammable finishes shall comply with the applicable provisions of Section 416.

[F] 412.5.1 Occupancy classification. Aircraft paint hangars shall be classified in accordance with the provisions of Section 307.1. Aircraft paint hangars shall comply with the applicable requirements of this code and the *California Fire Code* for such occupancy.

412.5.2 Construction. Aircraft paint hangars shall be of Type I or II construction.

[F] 412.5.3 Spray equipment cleaning operations. Spray equipment cleaning operations shall be conducted in a liquid use, dispensing and mixing room.

[F] 412.5.4 Operations. Only those flammable liquids necessary for painting operations shall be permitted in quantities less than the maximum allowable quantities per control area in Table 307.1(1). Spray equipment cleaning operations exceeding the maximum allowable quantities per control area in Table 307.1(1) shall be conducted in a liquid use, dispensing and mixing room.

[F] 412.5.5 Storage. Storage of flammable or combustible liquids exceeding the maximum allowable quantities per control area in Table 307.1(1) shall be in a liquid storage room.

[F] 412.5.6 Fire suppression. Aircraft paint hangars shall be provided with fire suppression as required by NFPA 409.

[F] 412.5.7 Ventilation. Aircraft paint hangars shall be provided with ventilation as required in the *California Mechanical Code*.

[F] 412.5.8 Electrical. Electrical equipment and devices within the aircraft paint hangar shall comply with *California Electrical Code.*

[F] 412.5.8.1 Class I, Division I hazardous locations. The area within 10 feet (3048 mm) horizontally from aircraft surfaces and from the floor to 10 feet (3048 mm) above the aircraft surface shall be classified as a Class I, Division I location.

[F] 412.5.8.2 Class I, Division 2 hazardous locations. The area horizontally from aircraft surfaces between 10 feet (3048 mm) and 30 feet (9144 mm) and from the floor to 30 feet (9144 mm) above the aircraft surface shall be classified as a Class I, Division 2 location.

[BE] 412.6 Aircraft manufacturing facilities. In buildings used for the manufacturing of aircraft, exit access travel distances indicated in Section 1017.1 shall be increased in accordance with the following:

1. The building shall be of Type I or II construction.
2. Exit access travel distance shall not exceed the distances given in Table 412.6.

[BE] TABLE 412.6—AIRCRAFT MANUFACTURING EXIT ACCESS TRAVEL DISTANCE

HEIGHT (feet)[b]	MANUFACTURING AREA (square feet)[a]					
	≥ 150,000	≥ 200,000	≥ 250,000	≥ 500,000	≥ 750,000	≥ 1,000,000
≥ 25	400	450	500	500	500	500
≥ 50	400	500	600	700	700	700
≥ 75	400	500	700	850	1,000	1,000
≥ 100	400	500	750	1,000	1,250	1,500

For SI: 1 foot = 304.8 mm.
a. Contiguous floor area of the aircraft manufacturing *facility* having the indicated height.
b. Minimum height from finished floor to bottom of ceiling or roof slab or deck.

[BE] 412.6.1 Ancillary areas. Rooms, areas and spaces ancillary to the primary manufacturing area shall be permitted to egress through such area having a minimum height as indicated in Table 412.6. Exit access travel distance within the ancillary room, area or space shall not exceed that indicated in Table 1017.2 based on the occupancy classification of that ancillary area. Total exit access travel distance shall not exceed that indicated in Table 412.6.

[F] 412.7 Heliports and helistops. Heliports and helistops shall be permitted to be erected on buildings or other locations where they are constructed in accordance with Sections 412.7.1 through 412.7.5.

[F] 412.7.1 Size. The landing area for helicopters less than 3,500 pounds (1588 kg) shall be not less than 20 feet (6096 mm) in length and width. The landing area shall be surrounded on all sides by a clear area having an average width at roof level of 15 feet (4572 mm), and all widths shall be not less than 5 feet (1524 mm).

[F] 412.7.2 Design. Helicopter landing areas and the supports thereof on the roof of a building shall be noncombustible construction. Landing areas shall be designed to confine any flammable liquid spillage to the landing area itself and provisions shall be made to drain such spillage away from any exit or stairway serving the helicopter landing area or from a structure housing such exit or stairway. For structural design requirements, see Section 1607.6.

[BE] 412.7.3 Means of egress. The means of egress from heliports and helistops shall comply with the provisions of Chapter 10. Landing areas located on buildings or structures shall have two or more exits or access to exits. For landing areas less than 60 feet (18 288 mm) in length or less than 2,000 square feet (186 m^2) in area, the second means of egress is permitted to be a fire escape, alternating tread device or ladder leading to the floor below.

[F] 412.7.4 Rooftop heliports and helistops. Rooftop heliports and helistops shall comply with NFPA 418.

[F] 412.7.5 Standpipe system. In buildings equipped with a standpipe system, the standpipe shall extend to the roof level in accordance with Section 905.3.5.

SECTION 413—COMBUSTIBLE STORAGE

413.1 General. High-piled stock or rack storage in any occupancy group shall comply with the *California Fire Code*.

413.2 Attic, under-floor and concealed spaces. Attic, under-floor and concealed spaces used for storage of combustible materials shall be protected on the storage side as required for 1-hour fire-resistance-rated construction. Openings shall be protected by assemblies that are self-closing and are of noncombustible construction or solid wood core not less than $1^3/_4$ inches (45 mm) in thickness.

Exception: Neither fire-resistance-rated construction nor opening protectives are required in any of the following locations:

1. Areas protected by approved automatic sprinkler systems.
2. Group R-3 and U occupancies.

SECTION 414—HAZARDOUS MATERIALS

[F] 414.1 General. Buildings and structures occupied for the manufacturing, processing, dispensing, use or storage of hazardous materials shall comply with Sections 414.1 through 414.6.

Exception: Exemptions listed in Table 307.1.1 shall not be required to comply with Section 414.

[F] 414.1.1 Other provisions. Buildings and structures with an occupancy in Group H shall comply with this section and the applicable provisions of Section 415 and the *California Fire Code. See Section 453 for Group L occupancies.*

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[F] 414.1.2 Materials. The safe design of hazardous material occupancies is material dependent. Individual material requirements are found in Sections 307 and 415, the *California Mechanical Cod*e and the *California Fire Code.*

[F] 414.1.2.1 Aerosol products, aerosol cooking spray products and plastic aerosol 3 products. Level 2 and 3 aerosol products, aerosol cooking spray products and plastic aerosol 3 products shall be stored and displayed in accordance with the *California Fire Code*. See Section 311.2 and the *California Fire Code* for occupancy group requirements.

[F] 414.1.3 Information required. A report shall be submitted to the building official identifying the maximum expected quantities of hazardous materials to be stored, used in a closed system and used in an open system, and subdivided to separately address hazardous material classification categories based on Tables 307.1(1) and 307.1(2). The methods of protection from such hazards, including but not limited to control areas, fire protection systems and Group H occupancies shall be indicated in the report and on the construction documents. The opinion and report shall be prepared by a qualified person, firm or corporation approved by the building official and provided without charge to the enforcing agency.

For buildings and structures with an occupancy in Group H, separate floor plans shall be submitted identifying the locations of anticipated contents and processes so as to reflect the nature of each occupied portion of every building and structure.

[F] 414.2 Control areas. Control areas shall comply with Sections 414.2.1 through 414.2.5 and the *California Fire Code*.

[F] 414.2.1 Construction requirements. Control areas shall be separated from each other by fire barriers constructed in accordance with Section 707 or horizontal assemblies constructed in accordance with Section 711, or both.

[F] 414.2.2 Percentage of maximum allowable quantities. The percentage of maximum allowable quantities of hazardous materials per control area permitted at each floor level within a building shall be in accordance with Table 414.2.2.

[F] TABLE 414.2.2—DESIGN AND NUMBER OF CONTROL AREAS

STORY		PERCENTAGE OF THE MAXIMUM ALLOWABLE QUANTITY PER CONTROL AREA[a]	NUMBER OF CONTROL AREAS PER STORY	FIRE-RESISTANCE RATING FOR FIRE BARRIERS IN HOURS[b]
Above grade plane	Higher than 9	5	1	2
	7–9	5	2	2
	6	12.5	2	2
	5	12.5	2	2
	4	12.5	2	2
	3	50	2	1
	2	75	3	1
	1	100	4	1
Below grade plane	1	75	3	1
	2	50	2	1
	Lower than 2	Not Allowed	Not Allowed	Not Allowed

a. Percentages shall be of the maximum allowable quantity per control area shown in Tables 307.1(1) and 307.1(2), with all increases allowed in the notes to those tables.
b. Separation shall include fire barriers and horizontal assemblies as necessary to provide separation from other portions of the building.

[F] 414.2.3 Number. The maximum number of control areas within a building shall be in accordance with Table 414.2.2. For the purposes of determining the number of control areas within a building, each portion of a building separated by one or more fire walls complying with Section 706 shall be considered a separate building.

[F] 414.2.4 Fire-resistance rating requirements. The required fire-resistance rating for fire barriers shall be in accordance with Table 414.2.2. The floor assembly of the control area and the construction supporting the floor of the control area shall have a fire-resistance rating of not less than 2 hours.

Exception: The floor assembly of the control area and the construction supporting the floor of the control area are allowed to be 1-hour fire-resistance-rated in buildings of Types IIA, IIIA, IV and VA construction, provided that both of the following conditions exist:

1. The building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.
2. The building is three or fewer stories above grade plane.

[F] 414.2.5 Hazardous material in Group M display and storage areas and in Group S storage areas. Hazardous materials located in Group M and Group S occupancies shall be in accordance with Sections 414.2.5.1 through 414.2.5.4.

[F] 414.2.5.1 Nonflammable solids and nonflammable and noncombustible liquids. The aggregate quantity of nonflammable solid and nonflammable or noncombustible liquid hazardous materials permitted within a single control area of a Group M display and storage area, a Group S storage area or an outdoor control area is permitted to exceed the maximum allowable quantities per control area specified in Tables 307.1(1) and 307.1(2) without classifying the building or use as a Group H occupancy, provided that the materials are displayed and stored in accordance with the *California Fire Code* and quantities do not exceed the maximum allowable specified in Table 414.2.5.1.

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[F] TABLE 414.2.5.1—MAXIMUM ALLOWABLE QUANTITY PER INDOOR AND OUTDOOR CONTROL AREA IN GROUP M AND S OCCUPANCIES OF NONFLAMMABLE SOLIDS AND NONFLAMMABLE AND NONCOMBUSTIBLE LIQUIDS[d, e, f]

CONDITION		MAXIMUM ALLOWABLE QUANTITY PER CONTROL AREA	
Material[a]	Class	Solids (pounds)	Liquids (gallons)
A. Health-hazard materials—nonflammable and noncombustible solids and liquids			
1. Corrosives[b, c]	Not Applicable	9,750	975
2. Highly toxics	Not Applicable	20[b, c]	2[b, c]
3. Toxics[b, c]	Not Applicable	1,000[k]	100
B. Physical-hazard materials—nonflammable and noncombustible solids and liquids			
1. Oxidizers[b, c]	4	Not Allowed	Not Allowed
	3	1500[g]	150
	2	2,250[h]	225
	1	18,000[i, j]	1,800[i, j]
2. Unstable (reactives)[b, c]	4	Not Allowed	Not Allowed
	3	550	55
	2	1,150	115
	1	Not Limited	Not Limited
3. Water reactives	3[b, c]	550	55
	2[b, c]	1,150	115
	1	Not Limited	Not Limited

For SI: 1 pound = 0.454 kg, 1 gallon = 3.785 L.

a. Hazard categories are as specified in the *California Fire Code*.

b. Maximum allowable quantities shall be increased 100 percent in buildings that are sprinklered in accordance with Section 903.3.1.1. Where Note c also applies, the increase for both notes shall be applied accumulatively.

c. Maximum allowable quantities shall be increased 100 percent where stored in approved storage cabinets, in accordance with the *California Fire Code*. Where Note b also applies, the increase for both notes shall be applied accumulatively.

d. See Table 414.2.2 for design and number of control areas.

e. Allowable quantities for other hazardous material categories shall be in accordance with Section 307.

f. Maximum quantities shall be increased 100 percent in outdoor control areas.

g. Maximum amounts shall be increased to 2,250 pounds where individual packages are in the original sealed containers from the manufacturer or packager and do not exceed 10 pounds each.

h. Maximum amounts shall be increased to 4,500 pounds where individual packages are in the original sealed containers from the manufacturer or packager and do not exceed 10 pounds each.

i. The permitted quantities shall not be limited in a building equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.

j. Quantities are unlimited in an outdoor control area.

k. Maximum allowable quantities of consumer products shall be increased to 10,000 pounds where individual packages are in the original, sealed containers from the manufacturer and the toxic classification is exclusively based on the LC threshold and no other hazardous materials classifications apply.

[F] 414.2.5.2 Flammable and combustible liquids. In Group M occupancy wholesale and retail sales uses, indoor storage of flammable and combustible liquids shall not exceed the maximum allowable quantities per control area as indicated in Table 414.2.5.2, provided that the materials are displayed and stored in accordance with the *California Fire Code*.

[F] TABLE 414.2.5.2—MAXIMUM ALLOWABLE QUANTITY OF FLAMMABLE AND COMBUSTIBLE LIQUIDS IN WHOLESALE AND RETAIL SALES OCCUPANCIES PER CONTROL AREA[a]

TYPE OF LIQUID	MAXIMUM ALLOWABLE QUANTITY PER CONTROL AREA (gallons)		
	Sprinklered in accordance with Note b densities and arrangements	Sprinklered in accordance with Tables 5704.3.6.3(4) through 5704.3.6.3(8) and 5704.3.7.5.1 of the *California Fire Code*	Nonsprinklered
Class IA	60	60	30
Class IB, IC, II and IIIA	7,500[c]	15,000[c]	1,600
Class IIIB	Unlimited	Unlimited	13,200

For SI: 1 foot = 304.8 mm, 1 square foot = 0.0929 m^2, 1 gallon = 3.785 L, 1 gallon per minute per square foot = 40.75 L/min/m^2.

a. Control areas shall be separated from each other by not less than a 1-hour fire barrier wall.

b. To be considered as sprinklered, a building shall be equipped throughout with an approved automatic sprinkler system with a design providing minimum densities as follows:

1. For uncartoned commodities on shelves 6 feet or less in height where the ceiling height does not exceed 18 feet, quantities are those permitted with a minimum sprinkler design density of Ordinary Hazard Group 2.
2. For cartoned, palletized or racked commodities where storage is 4 feet 6 inches or less in height and where the ceiling height does not exceed 18 feet, quantities are those permitted with a minimum sprinkler design density of 0.21 gallon per minute per square foot over the most remote 1,500-square-foot area.

c. Where wholesale and retail sales or storage areas exceed 50,000 square feet in area, the maximum allowable quantities are allowed to be increased by 2 percent for each 1,000 square feet of area in excess of 50,000 square feet, up to not more than 100 percent of the table amounts. A control area separation is not required. The cumulative amounts, including amounts attained by having an additional control area, shall not exceed 30,000 gallons.

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[F] 414.2.5.3 Aerosol products, aerosol cooking spray products or plastic aerosol 3 products. The maximum quantity of aerosol products, aerosol cooking spray products or plastic aerosol 3 products in Group M occupancy retail display areas, storage areas adjacent to retail display areas and retail storage areas shall be in accordance with the *California Fire Code*.

[F] 414.2.5.4 Flammable gas. The aggregate quantity of Category 1B flammable gas having a burning velocity of 3.9 inches per second (10 cm/s) or less stored and displayed within a single control area of a Group M occupancy or stored in a single control area of a Group S occupancy is allowed to exceed the maximum allowable quantities per control area specified in Table 307.1(1) without classifying the building or use as a Group H occupancy, provided that the materials are stored and displayed in accordance with the *California Fire Code* and quantities do not exceed the amounts specified in Table 414.2.5.4.

[F] TABLE 414.2.5.4—MAXIMUM ALLOWABLE QUANTITY OF LOW BURNING VELOCITY CATEGORY 1B FLAMMABLE GAS IN GROUP M AND S OCCUPANCIES PER CONTROL AREA[a]

CATEGORY 1B (Low BV)[d]	MAXIMUM ALLOWABLE QUANTITY PER CONTROL AREA	
	Sprinklered[b]	Nonsprinklered
Gaseous	390,000 cu ft	195,000 cu ft
Liquefied	40,000 lb[c]	20,000 lb

For SI: 1 pound = 0.454 kg, 1 square foot = 0.0929 m^2, 1 cubic foot = 0.028 m^3, 1 inch per second = 2.54 cm/s.

a. Control areas shall be separated from each other by not less than a 1-hour fire barrier.

b. The building shall be equipped throughout with an approved automatic sprinkler system with a minimum sprinkler design density of Ordinary Hazard Group 2 in the area where flammable gases are stored or displayed.

c. Where storage areas exceed 50,000 square feet in area, the maximum allowable quantities area is allowed to be increased by 2 percent for each 1,000 square feet of area in excess of 50,000 square feet, up to not more than 100 percent of the table amounts. Separation of control areas is not required. The aggregate amount shall not exceed 80,000 pounds.

d. *Low Burning Velocity* (Low BV) Category 1B flammable gas has a burning velocity of 3.9 in/s or less.

[F] 414.3 Ventilation. Rooms, areas or spaces in which explosive, corrosive, combustible, flammable or highly toxic dusts, mists, fumes, vapors or gases are or have the potential to be emitted due to the processing, use, handling or storage of materials shall be mechanically ventilated where required by this code, the *California Fire Code* or the *California Mechanical Code*.

Emissions generated at workstations shall be confined to the area in which they are generated as specified in the *California Fire Code* and the *California Mechanical Code*.

[F] 414.4 Hazardous material systems. Systems involving hazardous materials shall be suitable for the intended application. Controls shall be designed to prevent materials from entering or leaving process or reaction systems at other than the intended time, rate or path. Automatic controls, where provided, shall be designed to be fail safe.

[F] 414.5 Inside storage, dispensing, *handling* and use. The inside storage, dispensing and use of hazardous materials shall be in accordance with Sections 414.5.1 through 414.5.3 of this code and the *California Fire Code*.

[F] 414.5.1 Explosion control. Explosion control shall be provided in accordance with the *California Fire Code* as required by Table 414.5.1 where quantities of hazardous materials specified in that table exceed the maximum allowable quantities in Table 307.1(1) or where a structure, room or space is occupied for purposes involving explosion hazards as required by Section 415 or the *California Fire Code*.

[F] TABLE 414.5.1—EXPLOSION CONTROL REQUIREMENTS[a, h]

MATERIAL	CLASS	EXPLOSION CONTROL METHODS	
		Barricade construction	Explosion (deflagration) venting or explosion (deflagration) prevention systems[b]
HAZARD CATEGORY			
Combustible dusts[c]	—	Not Required	Required
Cryogenic flammables	—	Not Required	Required
Explosives	Division 1.1	Required	Not Required
	Division 1.2	Required	Not Required
	Division 1.3	Not Required	Required
	Division 1.4[j]	Not Required	Required
	Division 1.5	Required	Not Required
	Division 1.6	Required	Not Required
Flammable gas	Gaseous	Not Required	Required[k]
	Liquefied	Not Required	Required[k]
Flammable liquid	IA[d]	Not Required	Required
	IB[e]	Not Required	Required
Organic peroxides	U	Required	Not Permitted
	I	Required	Not Permitted

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[F] TABLE 414.5.1—EXPLOSION CONTROL REQUIREMENTS[a, h]—continued			
MATERIAL	CLASS	EXPLOSION CONTROL METHODS	
		Barricade construction	Explosion (deflagration) venting or explosion (deflagration) prevention systems[b]
Oxidizer liquids and solids	4	Required	Not Permitted
Pyrophoric gas	—	Not Required	Required
Unstable (reactive)	4	Required	Not Permitted
	3 Detonable	Required	Not Permitted
	3 Nondetonable	Not Required	Required
Water-reactive liquids and solids	3	Not Required	Required
	2[g]	Not Required	Required
SPECIAL USES			
Acetylene generator rooms	—	Not Required	Required
Electrochemical energy storage system[i]	—	Not Required	Required
Energy storage system[i]	—	Not Required	Required
Grain processing	—	Not Required	Required
Liquefied petroleum gas-distribution facilities	—	Not Required	Required
Where explosion hazards exist[f]	Detonation	Required	Not Permitted
	Deflagration	Not Required	Required

a. See Section 414.1.3.
b. See the *California Fire Code*.
c. Combustible dusts where manufactured, generated or used in such a manner that the concentration and conditions create a fire or explosion hazard based on information prepared in accordance with Section 104.2.2 of the *California Fire Code*. See definition of "Combustible dust" in Chapter 2.
d. Storage or use.
e. In open use or dispensing.
f. Rooms containing dispensing and use of hazardous materials where an explosive environment can occur because of the characteristics or nature of the hazardous materials or as a result of the dispensing or use process.
g. A method of explosion control shall be provided where Class 2 water-reactive materials can form potentially explosive mixtures.
h. Explosion venting is not required for Group H-5 fabrication areas complying with Section 415.11.1 and the *California Fire Code*.
i. Where explosion control is required in Section 1207 of the *California Fire Code*.
j. Does not apply to consumer fireworks, Division 1.4G.
k. Not required for Category 1B Flammable Gases having a burning velocity not exceeding 3.9 inches per second (10 cm/s).

[F] 414.5.2 Emergency or standby power. Where required by the *California Fire Code* or this code, mechanical ventilation, treatment systems, temperature control, alarm, detection or other electrically operated systems shall be provided with emergency or standby power in accordance with Section 2702. For storage and use areas for highly toxic or toxic materials, see Sections 6004.2.2.8 and 6004.3.4.2 of the *California Fire Code*.

[F] 414.5.2.1 Exempt applications. Emergency or standby power is not required for the mechanical ventilation systems provided for any of the following:

1. Storage of Class IB and IC flammable and combustible liquids in closed containers not exceeding 6.5 gallons (25 L) capacity.
2. Storage of Class 1 and 2 oxidizers.
3. Storage of Class II, III, IV and V organic peroxides.
4. Storage of asphyxiant, irritant and radioactive gases.

[F] 414.5.2.2 Fail-safe engineered systems. Standby power for mechanical ventilation, treatment systems and temperature control systems shall not be required where an approved fail-safe engineered system is installed.

[F] 414.5.3 Spill control, drainage and containment. Rooms, buildings or areas occupied for the storage of solid and liquid hazardous materials shall be provided with a means to control spillage and to contain or drain off spillage and fire protection water discharged in the storage area where required in the *California Fire Code*. The methods of spill control shall be in accordance with the *California Fire Code*.

414.5.4 Hazardous material handling. *The handling of hazardous materials shall be in accordance with California Fire Code Section 5003.*

[F] 414.6 Outdoor storage, dispensing and use. The outdoor storage, dispensing and use of hazardous materials shall be in accordance with the *California Fire Code*.

[F] 414.6.1 Weather protection. Where weather protection is provided for sheltering outdoor hazardous material storage or use areas, such areas shall be considered outdoor storage or use where the weather protection structure complies with Sections 414.6.1.1 through 414.6.1.3.

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[F] 414.6.1.1 Walls. Walls shall not obstruct more than one side of the structure.

Exception: Walls shall be permitted to obstruct portions of multiple sides of the structure, provided that the obstructed area is not greater than 25 percent of the structure's perimeter.

[F] 414.6.1.2 Separation distance. The distance from the structure to buildings, lot lines, public ways or means of egress to a public way shall be not less than the distance required for an outside hazardous material storage or use area without weather protection.

[F] 414.6.1.3 Noncombustible construction. The overhead structure shall be of approved noncombustible construction with a maximum area of 1,500 square feet (140 m^2).

Exception: The maximum area is permitted to be increased as provided by Section 506.

SECTION 415—GROUPS H-1, H-2, H-3, H-4 AND H-5

[F] 415.1 General. Occupancies classified as Group H-1, H-2, H-3, H-4 and H-5 in accordance with Section 307 shall comply with Sections 415.1 through 415.11.

[F] 415.2 Compliance. Buildings and structures with an occupancy in Group H shall comply with the applicable provisions of Section 414 and the *California Fire Code*.

[F] 415.3 Automatic fire detection systems. Group H occupancies shall be provided with an automatic fire detection system in accordance with Section 907.2.

[F] 415.4 Automatic sprinkler system. Group H occupancies shall be equipped throughout with an automatic sprinkler system in accordance with Section 903.2.5.

[F] 415.5 Emergency alarms. Emergency alarms for the detection and notification of an emergency condition in Group H occupancies shall be provided as set forth herein.

[F] 415.5.1 Storage. An approved manual emergency alarm system shall be provided in buildings, rooms or areas used for storage of hazardous materials. Emergency alarm-initiating devices shall be installed outside of each interior exit or exit access door of storage buildings, rooms or areas. Activation of an emergency alarm-initiating device shall sound a local alarm to alert occupants of an emergency situation involving hazardous materials.

[F] 415.5.2 Dispensing, use and handling. Where hazardous materials having a hazard ranking of 3 or 4 in accordance with NFPA 704 are transported through corridors, interior exit stairways or ramps, or exit passageways, there shall be an emergency telephone system, a local manual alarm station or an approved alarm-initiating device at not more than 150-foot (45 720 mm) intervals and at each exit and exit access doorway throughout the transport route. The signal shall be relayed to an approved central, proprietary or remote station service or constantly attended on-site location and shall initiate a local audible alarm.

[F] 415.5.3 Supervision. Emergency alarm systems required by Section 415.5.1 or 415.5.2 shall be electrically supervised and monitored by an approved central, proprietary or remote station service or shall initiate an audible and visual signal at a constantly attended on-site location.

[F] 415.5.4 Emergency alarm systems. Emergency alarm systems required by Section 415.5.1 or 415.5.2 shall be provided with emergency or standby power in accordance with Section 2702.2.

[F] 415.6 Fire separation distance. Group H occupancies shall be located on property in accordance with the other provisions of this chapter. In Groups H-2 and H-3, not less than 25 percent of the perimeter wall of the occupancy shall be an exterior wall.

[F] 415.6.1 Rooms for flammable or combustible liquid use, dispensing or mixing in open systems. Rooms for flammable or combustible liquid use, dispensing or mixing in open systems having a floor area of not more than 500 square feet (46.5 m^2) need not be located on the outer perimeter of the building where they are in accordance with the *California Fire Code* and NFPA 30.

[F] 415.6.2 Liquid storage rooms and rooms for flammable or combustible *liquid* use in *closed systems*. Liquid storage rooms and rooms for flammable or combustible liquid use in closed systems, having a floor area of not more than 1,000 square feet (93 m^2) need not be located on the outer perimeter where they are in accordance with the *California Fire Code* and NFPA 30.

[F] 415.6.3 Spray paint booths. Spray paint booths that comply with the *California Fire Code* need not be located on the outer perimeter.

[F] 415.6.4 Group H occupancy minimum fire separation distance. Regardless of any other provisions, buildings containing Group H occupancies shall be set back to the minimum fire separation distance as set forth in Sections 415.6.4.1 through 415.6.4.4. Distances shall be measured from the walls enclosing the occupancy to lot lines, including those on a public way. Distances to assumed lot lines established for the purpose of determining exterior wall and opening protection are not to be used to establish the minimum fire separation distance for buildings on sites where explosives are manufactured or used where separation is provided in accordance with the quantity distance tables specified for explosive materials in the *California Fire Code*.

[F] 415.6.4.1 Group H-1. Group H-1 occupancies shall be set back not less than 75 feet (22 860 mm) and not less than required by the *California Fire Code*.

Exception: Fireworks manufacturing buildings separated in accordance with NFPA 1124.

[F] 415.6.4.2 Group H-2. Group H-2 occupancies shall be set back not less than 30 feet (9144 mm) where the area of the occupancy is greater than 1,000 square feet (93 m^2) and it is not required to be located in a detached building.

[F] 415.6.4.3 Groups H-2 and H-3. Group H-2 and H-3 occupancies shall be set back not less than 50 feet (15 240 mm) where a detached building is required (see Table 415.6.5).

[F] 415.6.4.4 Explosive materials. Group H-2 and H-3 occupancies containing materials with explosive characteristics shall be separated as required by the *California Fire Code*. Where separations are not specified, the distances required shall be determined by a technical report issued in accordance with Section 414.1.3.

[F] 415.6.5 Detached buildings for Group H-1, H-2 or H-3 occupancy. The storage or use of hazardous materials in excess of those amounts specified in Table 415.6.5 shall be in accordance with the applicable provisions of Sections 415.7 and 415.8.

[F] TABLE 415.6.5—DETACHED BUILDING REQUIRED

A DETACHED BUILDING IS REQUIRED WHERE THE QUANTITY OF MATERIAL EXCEEDS THAT SPECIFIED HEREIN			
Material	**Class**	**Solids and Liquids (tons)[a, b]**	**Gases (cubic feet)[a, b]**
Explosives	Division 1.1	Maximum Allowable Quantity	Not Applicable
	Division 1.2	Maximum Allowable Quantity	
	Division 1.3	Maximum Allowable Quantity	
	Division 1.4[e]	Maximum Allowable Quantity	
	Division 1.4[c, e]	1	
	Division 1.5	Maximum Allowable Quantity	
	Division 1.6	Maximum Allowable Quantity	
Oxidizers	Class 4	Maximum Allowable Quantity	Maximum Allowable Quantity
Unstable (reactives) detonable	Class 3 or 4	Maximum Allowable Quantity	Maximum Allowable Quantity
Oxidizer, liquids and solids	Class 3	1,200	Not Applicable
	Class 2	2,000	Not Applicable
Organic peroxides	Detonable	Maximum Allowable Quantity	Not Applicable
	Class I	Maximum Allowable Quantity	Not Applicable
	Class II	25	Not Applicable
	Class III	50	Not Applicable
Unstable (reactives) nondetonable	Class 3	1	2,000
	Class 2	25	10,000
Water reactives	Class 3	1	Not Applicable
	Class 2	25	Not Applicable
Pyrophoric gases[d]	Not Applicable	Not Applicable	2,000

For SI: 1 ton = 906 kg, 1 cubic foot = 0.02832 m^3, 1 pound = 0.454 kg.

a. For materials that are detonable, the distance to other buildings or lot lines shall be in accordance with Section 415.6 of this code or Chapter 56 of the *California Fire Code* based on trinitrotoluene (TNT) equivalence of the material, whichever is greater.

b. "Maximum Allowable Quantity" means the maximum allowable quantity per control area set forth in Table 307.1(1).

c. Limited to Division 1.4 materials and articles, including articles packaged for shipment, that are not regulated as an *explosive* under Bureau of Alcohol, Tobacco, Firearms and Explosives (BATF) regulations or unpackaged articles used in process operations that do not propagate a detonation or deflagration between articles, provided that the net explosive weight of individual articles does not exceed 1 pound.

d. Detached buildings are not required, for gases in gas rooms that support H-5 fabrication facilities where the gas room is separated from other areas by a fire barrier with a fire-resistance rating of not less than 2 hours and the gas is located in a gas cabinet that is internally sprinklered, equipped with continuous leak detection, automatic shutdown and is not manifolded upstream of pressure controls. Additionally, the gas supply is limited to cylinders that do not exceed 125 pounds (57 kg) water capacity in accordance with 49 CFR 173.192 for Hazard Zone A toxic gases.

e. Does not apply to consumer fireworks, Division 1.4G.

[F] 415.6.5.1 Wall and opening protection. Where a detached building is required by Table 415.6.5, wall and opening protection based on fire separation distance is not required.

[F] 415.7 Special provisions for Group H-1 occupancies. Group H-1 occupancies shall be in detached buildings not used for other purposes. Roofs shall be of lightweight construction with suitable thermal insulation to prevent sensitive material from reaching its decomposition temperature. Group H-1 occupancies containing materials that are in themselves both physical and health hazards in quantities exceeding the maximum allowable quantities per control area in Table 307.1(2) shall comply with requirements for both Group H-1 and H-4 occupancies.

[F] 415.7.1 Floors in storage rooms. Floors in storage areas for organic peroxides, pyrophoric materials and unstable (reactive) materials shall be of liquid-tight, noncombustible construction.

[F] 415.8 Special provisions for Group H-2 and H-3 occupancies. Group H-2 and H-3 occupancies containing quantities of hazardous materials in excess of those set forth in Table 415.6.5 shall be in detached buildings used for manufacturing, processing, dispensing, use or storage of hazardous materials. Materials specified for Group H-1 occupancies in Section 307.3 are permitted to be located within Group H-2 or H-3 detached buildings provided that the amount of materials per control area do not exceed the maximum allowed quantity specified in Table 307.1(1).

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[F] 415.8.1 Multiple hazards. Group H-2 or H-3 occupancies containing materials that are in themselves both physical and health hazards in quantities exceeding the maximum allowable quantities per control area in Table 307.1(2) shall comply with requirements for Group H-2, H-3 or H-4 occupancies as applicable.

[F] 415.8.2 Separation of incompatible materials. Hazardous materials other than those specified in Table 415.6.5 shall be allowed in manufacturing, processing, dispensing, use or storage areas when separated from incompatible materials in accordance with the provisions of the *California Fire Code*.

[F] 415.8.3 Water reactives. Group H-2 and H-3 occupancies containing water-reactive materials shall be resistant to water penetration. Piping for conveying liquids shall not be over or through areas containing water reactives, unless isolated by approved liquid-tight construction.

Exception: Fire protection piping shall be permitted over or through areas containing water reactives without isolating it with liquid-tight construction.

[F] 415.8.4 Floors in storage rooms. Floors in storage areas for organic peroxides, oxidizers, pyrophoric materials, unstable (reactive) materials and water-reactive solids and liquids shall be of liquid-tight, noncombustible construction.

[F] 415.8.5 Waterproof room. Rooms or areas used for the storage of water-reactive solids and liquids shall be constructed in a manner that resists the penetration of water through the use of waterproof materials. Piping carrying water for other than approved automatic sprinkler systems shall not be within such rooms or areas.

[F] 415.9 Group H-2. Occupancies in Group H-2 shall be constructed in accordance with Sections 415.9.1 through 415.9.3 and the *California Fire Code.*

[F] 415.9.1 Flammable and combustible liquids. The storage, handling, processing and transporting of flammable and combustible liquids in Group H-2 and H-3 occupancies shall be in accordance with Sections 415.9.1.1 through 415.9.1.9, the *California Mechanical Code* and the *California Fire Code*.

[F] 415.9.1.1 Mixed occupancies. Where the storage tank area is located in a building of two or more occupancies and the quantity of liquid exceeds the maximum allowable quantity for one control area, the use shall be completely separated from adjacent occupancies in accordance with the requirements of Section 508.4.

[F] 415.9.1.1.1 Height exception. Where storage tanks are located within a building not more than one story above grade plane, the height limitation of Section 504 shall not apply for Group H.

[F] 415.9.1.2 Tank protection. Storage tanks shall be noncombustible and protected from physical damage. Fire barriers or horizontal assemblies or both around the storage tanks shall be permitted as the method of protection from physical damage.

[F] 415.9.1.3 Tanks. Storage tanks shall be approved tanks conforming to the requirements of the *California Fire Code*.

[F] 415.9.1.4 Leakage containment. A liquid-tight containment area compatible with the stored liquid shall be provided. The method of spill control, drainage control and secondary containment shall be in accordance with the *California Fire Code*.

Exception: Rooms where only double-wall storage tanks conforming to Section 415.9.1.3 are used to store Class I, II and IIIA flammable and combustible liquids shall not be required to have a leakage containment area.

[F] 415.9.1.5 Leakage alarm. An approved automatic alarm shall be provided to indicate a leak in a storage tank and room. The alarm shall sound an audible signal, 15 dBa above the ambient sound level, at every point of entry into the room in which the leaking storage tank is located. An approved sign shall be posted on every entry door to the tank storage room indicating the potential hazard of the interior room environment, or the sign shall state, “WARNING, WHEN ALARM SOUNDS, THE ENVIRONMENT WITHIN THE ROOM MAY BE HAZARDOUS.” The leakage alarm shall be supervised in accordance with Chapter 9 to transmit a trouble signal.

[F] 415.9.1.6 Tank vent. Storage tank vents for Class I, II or IIIA liquids shall terminate to the outdoor air in accordance with the *California Fire Code*.

[F] 415.9.1.7 Room ventilation. Storage tank areas storing Class I, II or IIIA liquids shall be provided with mechanical ventilation. The mechanical ventilation system shall be in accordance with the *California Mechanical Code* and the *California Fire Code*.

[F] 415.9.1.8 Explosion venting. Where Class I liquids are being stored, *explosion* venting shall be provided in accordance with the *California Fire Code*.

[F] 415.9.1.9 Tank openings other than vents. Tank openings other than vents from tanks inside buildings shall be designed to ensure that liquids or vapor concentrations are not released inside the building.

[F] 415.9.2 Liquefied petroleum gas facilities. The construction and installation of liquefied petroleum gas facilities shall be in accordance with the requirements of this code, the *California Fire Code*, the *California Plumbing Code*, the *California Mechanical Code* and NFPA 58.

[F] 415.9.3 Dry cleaning plants. The construction and installation of dry cleaning plants shall be in accordance with the requirements of this code, the *California Mechanical Code*, the *California Plumbing Code* and NFPA 32. Dry cleaning solvents and systems shall be classified in accordance with the *California Fire Code*.

[F] 415.10 Groups H-3 and H-4. Groups H-3 and H-4 shall be constructed in accordance with the applicable provisions of this code and the *California Fire Code*.

[F] 415.10.1 Flammable and combustible liquids. The storage, handling, processing and transporting of flammable and combustible liquids in Group H-3 occupancies shall be in accordance with Section 415.9.1.

[F] 415.10.2 Gas rooms. Where gas rooms are provided, such rooms shall be separated from other areas by not less than 1-hour fire barriers constructed in accordance with Section 707 or horizontal assemblies constructed in accordance with Section 711, or both.

[F] 415.10.3 Floors in storage rooms. Floors in storage areas for corrosive liquids and highly toxic or toxic materials shall be of liquid-tight, noncombustible construction.

[F] 415.10.4 Separation of highly toxic solids and liquids. Highly toxic solids and liquids not stored in approved hazardous materials storage cabinets shall be isolated from other hazardous materials storage by not less than 1-hour fire barriers constructed in accordance with Section 707 or horizontal assemblies constructed in accordance with Section 711, or both.

[F] 415.11 Group H-5. In addition to the requirements set forth elsewhere in this code, Group H-5 shall comply with the provisions of Sections 415.11.1 through 415.11.12 and the *California Fire Code*.

[F] 415.11.1 Fabrication areas. Fabrication areas shall comply with Sections 415.11.1.1 through 415.11.1.8.

[F] 415.11.1.1 Hazardous materials. The aggregate quantities of hazardous materials stored and used in a single fabrication area shall not exceed the quantities set forth in Table 415.11.1.1.

Exception: The quantity limitations for any hazard category in Table 415.11.1.1 shall not apply where the fabrication area contains quantities of hazardous materials not exceeding the maximum allowable quantities per control area established by Tables 307.1(1) and 307.1(2).

[F] TABLE 415.11.1.1—QUANTITY LIMITS FOR HAZARDOUS MATERIALS IN A SINGLE FABRICATION AREA IN GROUP H-5[a]

HAZARD CATEGORY		SOLIDS (pounds per square foot)	LIQUIDS (gallons per square foot)	GAS (cubic feet @ NTP/square foot)
PHYSICAL-HAZARD MATERIALS				
Combustible dust		Note b	Not Applicable	Not Applicable
Combustible fiber	Loose	Note b	Not Applicable	Not Applicable
	Baled	Notes b and c		
Combustible liquid	II	Not Applicable	0.02	Not Applicable
	IIIA		0.04	
	IIIB		Not Limited	
Combination Class	I, II and IIIA		0.08	
Cryogenic gas	Flammable	Not Applicable	Not Applicable	Note d
	Oxidizing			2.5
Explosives		Note b	Note b	Note b
Flammable gas	Gaseous	Not Applicable	Not Applicable	Note d
	Liquefied			Note d
Flammable liquid	IA	Not Applicable	0.005	Not Applicable
	IB		0.05	
	IC		0.05	
Combination Class	IA, IB and IC		0.05	
Combination Class	I, II and IIIA		0.08	
Flammable solid		0.002	Not Applicable	Not Applicable
Organic peroxide	Unclassified detonable	Note b	Note b	Not Applicable
	Class I	Note b	Note b	
	Class II	0.05	0.0025	
	Class III	0.2	0.02	
	Class IV	Not Limited	Not Limited	
	Class V	Not Limited	Not Limited	
PHYSICAL-HAZARD MATERIALS				
Oxidizing gas	Gaseous	Not Applicable	Not Applicable	2.5
	Liquefied			2.5
Combination of gaseous and liquefied				2.5
Oxidizer	Class 4	Note b	Note b	Not Applicable
	Class 3	0.006	0.06	
	Class 2	0.006	0.06	
	Class 1	0.006	0.06	
Combination Class	1, 2, 3	0.006	0.06	

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[F] TABLE 415.11.1.1—QUANTITY LIMITS FOR HAZARDOUS MATERIALS IN A SINGLE FABRICATION AREA IN GROUP H-5[a]—continued

HAZARD CATEGORY		SOLIDS (pounds per square foot)	LIQUIDS (gallons per square foot)	GAS (cubic feet @ NTP/square foot)
Pyrophoric materials		Note b	0.0025	Notes d and e
Unstable (reactive)	Class 4	Note b	Note b	Note b
	Class 3	0.05	0.005	Note b
	Class 2	0.2	0.02	Note b
	Class 1	Not Limited	Not Limited	Not Limited
Water reactive	Class 3	0.02[f]	0.0025	Not Applicable
	Class 2	0.5	0.05	
	Class 1	Not Limited	Not Limited	
HEALTH-HAZARD MATERIALS				
Corrosives		Not Limited	Not Limited	Not Limited
Highly toxic		Not Limited	Not Limited	Note d
Toxics		Not Limited	Not Limited	Note d

For SI: 1 pound = 0.454 kg, 1 pound per square foot = 4.882 kg/m^2, 1 gallon per square foot = 40.7 L/m^2, 1 cubic foot @ *NTP*/square foot = 0.305 m^3 @ *NTP*/m^2, 1 cubic foot = 0.02832 m^3.

a. Hazardous materials within piping shall not be included in the calculated quantities.

b. Quantity of hazardous materials in a single fabrication shall not exceed the maximum allowable quantities per control area in Tables 307.1(1) and 307.1(2).

c. Densely packed baled cotton that complies with the packing requirements of ISO 8115 shall not be included in this material class.

d. The aggregate quantity of flammable, pyrophoric, toxic and highly toxic gases shall not exceed the greater of 0.2 cubic feet at *NTP*/square foot or 9,000 cubic feet at *NTP*.

e. The aggregate quantity of pyrophoric gases in the building shall not exceed the amounts set forth in Table 415.6.5.

f. Quantity of Class 3 water-reactive solids in a single tool shall not exceed 1 pound.

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[F] 415.11.1.2 Separation. Fabrication areas, whose sizes are limited by the quantity of hazardous materials allowed by Table 415.11.1.1, shall be separated from each other, from corridors and from other parts of the building by not less than 1-hour fire barriers constructed in accordance with Section 707 or horizontal assemblies constructed in accordance with Section 711, or both.

Exceptions:

1. Doors within such fire barrier walls, including doors to corridors, shall be only self-closing fire door assemblies having a fire protection rating of not less than $^3/_4$ hour.
2. Windows between fabrication areas and corridors are permitted to be fixed glazing listed and labeled for a fire protection rating of not less than $^3/_4$ hour in accordance with Section 716.

[F] 415.11.1.3 Location of occupied levels. Occupied levels of fabrication areas shall be located at or above the first story above grade plane.

[F] 415.11.1.4 Floors. Except for surfacing, floors within fabrication areas shall be of noncombustible construction.

Openings through floors of fabrication areas are permitted to be unprotected where the interconnected levels are used solely for mechanical equipment directly related to such fabrication areas (see Section 415.11.1.5).

Floors forming a part of an occupancy separation shall be liquid tight.

[F] 415.11.1.5 Shafts and openings through floors. Elevator hoistways, vent shafts and other openings through floors shall be enclosed where required by Sections 712 and 713. Mechanical, duct and piping penetrations within a fabrication area shall not extend through more than two floors. The annular space around penetrations for cables, cable trays, tubing, piping, conduit or ducts shall be sealed at the floor level to restrict the movement of air. The fabrication area, including the areas through which the ductwork and piping extend, shall be considered to be a single conditioned environment.

[F] 415.11.1.6 Ventilation. Mechanical exhaust ventilation at the rate of not less than 1 cubic foot per minute per square foot [0.0051 m^3/(s × m^2)] of floor area shall be provided throughout the portions of the fabrication area where HPM are used or stored. The exhaust air duct system of one fabrication area shall not connect to another duct system outside that fabrication area within the building.

A ventilation system shall be provided to capture and exhaust gases, fumes and vapors at workstations.

Two or more operations at a workstation shall not be connected to the same exhaust system where either one or the combination of the substances removed could constitute a fire, explosion or hazardous chemical reaction within the exhaust duct system.

Exhaust ducts penetrating fire barriers constructed in accordance with Section 707 or horizontal assemblies constructed in accordance with Section 711 shall be contained in a shaft of equivalent fire-resistance-rated construction. Exhaust ducts shall not penetrate fire walls.

Fire dampers shall not be installed in exhaust ducts.

[F] 415.11.1.7 Transporting hazardous production materials to fabrication areas. HPM shall be transported to fabrication areas through enclosed piping or tubing systems that comply with Section 415.11.7, through service corridors complying with Section 415.11.3, or in corridors as permitted in the exception to Section 415.11.2. The handling or transporting of HPM within service corridors shall comply with the *California Fire Code*.

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[F] 415.11.1.8 Electrical. Electrical equipment and devices within the fabrication area shall comply with *the California Electrical Code.* The requirements for hazardous locations need not be applied where the average air change is not less than four times that set forth in Section 415.11.1.6 and where the number of air changes at any location is not less than three times that required by Section 415.11.1.6. The use of recirculated air shall be permitted.

[F] 415.11.1.8.1 Workstations. Workstations shall not be energized without adequate exhaust ventilation. See Section 415.11.1.6 for workstation exhaust ventilation requirements.

[F] 415.11.2 Corridors. Corridors shall comply with Chapter 10 and shall be separated from fabrication areas as specified in Section 415.11.1.2. Corridors shall not contain HPM and shall not be used for transporting such materials except through closed piping systems as provided in Section 415.11.7.4.

Exception: Where existing fabrication areas are altered or modified, HPM is allowed to be transported in existing corridors, subject to the following conditions:

1. Nonproduction HPM is allowed to be transported in corridors if utilized for maintenance, lab work and testing.
2. Where existing fabrication areas are altered or modified, HPM is allowed to be transported in existing corridors, subject to the following conditions:
   - 2.1. Corridors. Corridors adjacent to the fabrication area where the alteration work is to be done shall comply with Section 1020 for a length determined as follows:
     - 2.1.1. The length of the common wall of the corridor and the fabrication area; and
     - 2.1.2. For the distance along the corridor to the point of entry of HPM into the corridor serving that fabrication area.
   - 2.2. Emergency alarm system. There shall be an emergency telephone system, a local manual alarm station or other approved alarm-initiating device within corridors at not more than 150-foot (45 720 mm) intervals and at each exit and doorway. The signal shall be relayed to an approved central, proprietary or remote station service or the emergency control station and shall initiate a local audible alarm.
   - 2.3. Pass-throughs. Self-closing doors having a fire protection rating of not less than 1 hour shall separate pass-throughs from existing corridors. Pass-throughs shall be constructed as required for the corridors and protected by an approved automatic sprinkler system.

[F] 415.11.3 Service corridors. Service corridors within a Group H-5 occupancy shall comply with Sections 415.11.3.1 through 415.11.3.4.

[F] 415.11.3.1 Use conditions. Service corridors shall be separated from corridors as required by Section 415.11.1.2. Service corridors shall not be used as a required corridor.

[F] 415.11.3.2 Mechanical ventilation. Service corridors shall be mechanically ventilated as required by Section 415.11.1.6 or at not less than six air changes per hour.

[F] 415.11.3.3 Means of egress. The distance of travel from any point in a service corridor to an exit, exit access corridor or door into a fabrication area shall be not greater than 75 feet (22 860 mm). Dead ends shall be not greater than 4 feet (1219 mm) in length. There shall be not less than two exits, and not more than one-half of the required means of egress shall require travel into a fabrication area. Doors from service corridors shall swing in the direction of egress travel and shall be self-closing.

[F] 415.11.3.4 Minimum width. The clear width of a service corridor shall be not less than 5 feet (1524 mm), or 33 inches (838 mm) wider than the widest cart or truck used in the service corridor, whichever is greater.

[F] 415.11.4 Emergency alarm system. Emergency alarm systems shall be provided in accordance with this section and Sections 415.5.1 and 415.5.2. The maximum allowable quantity per control area provisions shall not apply to emergency alarm systems required for HPM.

[F] 415.11.4.1 Service corridors. An emergency alarm system shall be provided in service corridors, with not fewer than one alarm device in each service corridor.

[F] 415.11.4.2 Corridors and interior exit stairways and ramps. Emergency alarms for corridors, interior exit stairways and ramps and exit passageways shall comply with Section 415.5.2.

[F] 415.11.4.3 Liquid storage rooms, HPM rooms and gas rooms. Emergency alarms for liquid storage rooms, HPM rooms and gas rooms shall comply with Section 415.5.1.

[F] 415.11.4.4 Alarm-initiating devices. An approved emergency telephone system, local alarm manual pull stations, or other approved alarm-initiating devices are allowed to be used as emergency alarm-initiating devices.

[F] 415.11.4.5 Alarm signals. Activation of the emergency alarm system shall sound a local alarm and transmit a signal to the emergency control station.

[F] 415.11.5 Storage of hazardous production materials. Storage of hazardous production materials (HPM) in fabrication areas shall be within approved or listed storage cabinets or gas cabinets or within a workstation. The storage of HPM in quantities greater than those specified in Section 5004.2 of the *California Fire Code* shall be in liquid storage rooms, HPM rooms or gas rooms as appropriate for the materials stored. The storage of other hazardous materials shall be in accordance with other applicable provisions of this code and the *California Fire Code*.

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[F] 415.11.6 HPM rooms, gas rooms, liquid storage room construction. HPM rooms, gas rooms and liquid storage rooms shall be constructed in accordance with Sections 415.11.6.1 through 415.11.6.9.

[F] 415.11.6.1 HPM rooms and gas rooms. HPM rooms and gas rooms shall be separated from other areas by fire barriers constructed in accordance with Section 707 or horizontal assemblies constructed in accordance with Section 711, or both. The fire-resistance rating shall be not less than 2 hours where the area is 300 square feet (27.9 m^2) or more and not less than 1 hour where the area is less than 300 square feet (27.9 m^2).

[F] 415.11.6.2 Liquid storage rooms. Liquid storage rooms shall be constructed in accordance with the following requirements:

1. Rooms greater than 500 square feet (46.5 m^2) in area, shall have not fewer than one exterior door approved for fire department access.
2. Rooms shall be separated from other areas by fire barriers constructed in accordance with Section 707 or horizontal assemblies constructed in accordance with Section 711, or both. The fire-resistance rating shall be not less than 1 hour for rooms up to 150 square feet (13.9 m^2) in area and not less than 2 hours where the room is more than 150 square feet (13.9 m^2) in area.
3. Shelving, racks and wainscotting in such areas shall be of noncombustible construction or wood of not less than 1-inch (25 mm) nominal thickness or fire-retardant-treated wood complying with Section 2303.2.
4. Rooms used for the storage of Class I flammable liquids shall not be located in a basement.

[F] 415.11.6.3 Floors. Except for surfacing, floors of HPM rooms and liquid storage rooms shall be of noncombustible liquid-tight construction. Raised grating over floors shall be of noncombustible materials.

[F] 415.11.6.4 Location. Where HPM rooms, liquid storage rooms and gas rooms are provided, they shall have not fewer than one exterior wall and such wall shall be not less than 30 feet (9144 mm) from lot lines, including lot lines adjacent to public ways.

[F] 415.11.6.5 Explosion control. Explosion control shall be provided where required by Section 414.5.1.

[F] 415.11.6.6 Exits. Where two exits are required from HPM rooms, liquid storage rooms and gas rooms, one shall be directly to the outside of the building.

[F] 415.11.6.7 Doors. Doors in a fire barrier wall, including doors to corridors, shall be self-closing fire door assemblies having a fire protection rating of not less than $^3/_4$ hour.

[F] 415.11.6.8 Ventilation. Mechanical exhaust ventilation shall be provided in liquid storage rooms, HPM rooms and gas rooms at the rate of not less than 1 cubic foot per minute per square foot (0.044 L/s/m^2) of floor area or six air changes per hour.

Exhaust ventilation for gas rooms shall be designed to operate at a negative pressure in relation to the surrounding areas and direct the exhaust ventilation to an exhaust system.

[F] 415.11.6.9 Emergency alarm system. An approved emergency alarm system shall be provided for HPM rooms, liquid storage rooms and gas rooms.

Emergency alarm-initiating devices shall be installed outside of each interior exit door of such rooms.

Activation of an emergency alarm-initiating device shall sound a local alarm and transmit a signal to the emergency control station.

An approved emergency telephone system, local alarm manual pull stations or other approved alarm-initiating devices are allowed to be used as emergency alarm-initiating devices.

[F] 415.11.7 Piping and tubing. Hazardous production materials piping and tubing shall comply with this section and ASME B31.3.

[F] 415.11.7.1 HPM having a health-hazard ranking of 3 or 4. Systems supplying HPM liquids or gases having a health-hazard ranking of 3 or 4 shall be welded throughout, except for connections, to the systems that are within a ventilated enclosure if the material is a gas, or an approved method of drainage or containment is provided for the connections if the material is a liquid.

[F] 415.11.7.2 Location in service corridors. Hazardous production materials supply piping or tubing in service corridors shall be exposed to view.

[F] 415.11.7.3 Excess flow control. Where HPM gases or liquids are carried in pressurized piping above 15 pounds per square inch gauge (psig) (103.4 kPa), excess flow control shall be provided. Where the piping originates from within a liquid storage room, HPM room or gas room, the excess flow control shall be located within the liquid storage room, HPM room or gas room. Where the piping originates from a bulk source, the excess flow control shall be located as close to the bulk source as practical.

[F] 415.11.7.4 Installations in corridors and above other occupancies. The installation of HPM piping and tubing within the space defined by the walls of corridors and the floor or roof above, or in concealed spaces above other occupancies, shall be in accordance with Sections 415.11.7.1 through 415.11.7.3 and the following conditions:

1. Automatic sprinklers shall be installed within the space unless the space is less than 6 inches (152 mm) in the least dimension.
2. Ventilation not less than six air changes per hour shall be provided. The space shall not be used to convey air from any other area.

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3. Where the piping or tubing is used to transport HPM liquids, a receptor shall be installed below such piping or tubing. The receptor shall be designed to collect any discharge or leakage and drain it to an approved location. The 1-hour enclosure shall not be used as part of the receptor.
4. HPM supply piping and tubing and nonmetallic waste lines shall be separated from the corridor and from occupancies other than Group H-5 by fire barriers or by an approved method or assembly that has a fire-resistance rating of not less than 1 hour. Access openings into the enclosure shall be protected by approved fire-protection-rated assemblies.
5. Ready access to manual or automatic remotely activated fail-safe emergency shutoff valves shall be installed on piping and tubing other than waste lines at the following locations:
    5.1. At branch connections into the fabrication area.
    5.2. At entries into corridors.

Exception: Transverse crossings of the corridors by supply piping that is enclosed within a ferrous pipe or tube for the width of the corridor need not comply with Items 1 through 5.

[F] 415.11.7.5 Identification. Piping, tubing and HPM waste lines shall be identified in accordance with ANSI A13.1 to indicate the material being transported.

[F] 415.11.8 Gas detection systems. A gas detection system complying with Section 916 shall be provided for HPM gases where the physiological warning threshold level of the gas is at a higher level than the accepted permissible exposure limit (PEL) for the gas and for flammable gases in accordance with Sections 415.11.8.1 through 415.11.8.2.

[F] 415.11.8.1 Where required. A gas detection system shall be provided in the areas identified in Sections 415.11.8.1.1 through 415.11.8.1.4.

[F] 415.11.8.1.1 Fabrication areas. A gas detection system shall be provided in fabrication areas where HPM gas is used in the fabrication area.

[F] 415.11.8.1.2 HPM rooms. A continuous gas detection system shall be provided in HPM rooms where HPM gas is used in the room.

[F] 415.11.8.1.3 Gas cabinets, exhausted enclosures and gas rooms. A gas detection system shall be provided in gas cabinets and exhausted enclosures for HPM gas. A gas detection system shall be provided in gas rooms where HPM gases are not located in gas cabinets or exhausted enclosures.

[F] 415.11.8.1.4 Corridors. Where HPM gases are transported in piping placed within the space defined by the walls of a corridor and the floor or roof above the corridor, a gas detection system shall be provided where piping is located and in the corridor.

Exception: A gas detection system is not required for occasional transverse crossings of the corridors by supply piping that is enclosed in a ferrous pipe or tube for the width of the corridor.

[F] 415.11.8.2 Gas detection system operation. The gas detection system shall be capable of monitoring the room, area or equipment in which the HPM gas is located at or below all the following gas concentrations:

1. Immediately dangerous to life and health (IDLH) values where the monitoring point is within an exhausted enclosure, ventilated enclosure or gas cabinet.
2. Permissible exposure limit (PEL) levels where the monitoring point is in an area outside an exhausted enclosure, ventilated enclosure or gas cabinet.
3. For flammable gases, the monitoring detection threshold level shall be vapor concentrations in excess of 25 percent of the lower flammable limit (LFL) where the monitoring is within or outside an exhausted enclosure, ventilated enclosure or gas cabinet.
4. Except as noted in this section, monitoring for highly toxic and toxic gases shall also comply with Chapter 60 of the *California Fire Code*.

[F] 415.11.8.2.1 Alarms. The gas detection system shall initiate a local alarm and transmit a signal to the emergency control station when a short-term hazard condition is detected. The alarm shall be both visual and audible and shall provide warning both inside and outside the area where the gas is detected. The audible alarm shall be distinct from all other alarms.

[F] 415.11.8.2.2 Shutoff of gas supply. The gas detection system shall automatically close the shutoff valve at the source on gas supply piping and tubing related to the system being monitored for which gas is detected when a short-term hazard condition is detected. Automatic closure of shutoff valves shall comply with the following:

1. Where the gas detection sampling point initiating the gas detection system alarm is within a gas cabinet or exhausted enclosure, the shutoff valve in the gas cabinet or exhausted enclosure for the specific gas detected shall automatically close.
2. Where the gas detection sampling point initiating the gas detection system alarm is within a room and compressed gas containers are not in gas cabinets or an exhausted enclosure, the shutoff valves on all gas lines for the specific gas detected shall automatically close.

3. Where the gas detection sampling point initiating the gas detection system alarm is within a piping distribution manifold enclosure, the shutoff valve supplying the manifold for the compressed gas container of the specific gas detected shall automatically close.

Exception: Where the gas detection sampling point initiating the gas detection system alarm is at the use location or within a gas valve enclosure of a branch line downstream of a piping distribution manifold, the shutoff valve for the branch line located in the piping distribution manifold enclosure shall automatically close.

[F] 415.11.9 Manual fire alarm system. An approved manual fire alarm system shall be provided throughout buildings containing Group H-5. Activation of the alarm system shall initiate a local alarm and transmit a signal to the emergency control station. The fire alarm system shall be designed and installed in accordance with Section 907.

[F] 415.11.10 Emergency control station. An emergency control station shall be provided in accordance with Sections 415.11.10.1 through 415.11.10.3.

[F] 415.11.10.1 Location. The emergency control station shall be located on the premises at an approved location outside the fabrication area.

[F] 415.11.10.2 Staffing. Trained personnel shall continuously staff the emergency control station.

[F] 415.11.10.3 Signals. The emergency control station shall receive signals from emergency equipment and alarm and detection systems. Such emergency equipment and alarm and detection systems shall include, but not be limited to, the following where such equipment or systems are required to be provided either in this chapter or elsewhere in this code:

1. Automatic sprinkler system alarm and monitoring systems.
2. Manual fire alarm systems.
3. Emergency alarm systems.
4. Gas detection systems.
5. Smoke detection systems.
6. Emergency power system.
7. Automatic detection and alarm systems for pyrophoric liquids and Class 3 water-reactive liquids required in Section 2705.2.3.4 of the *California Fire Code*.
8. Exhaust ventilation flow alarm devices for pyrophoric liquids and Class 3 water-reactive liquids cabinet exhaust ventilation systems required in Section 2705.2.3.4 of the *California Fire Code*.

[F] 415.11.11 Emergency power system. An emergency power system shall be provided in Group H-5 occupancies in accordance with Section 2702. The emergency power system shall supply power automatically to the electrical systems specified in Section 415.11.11.1 when the normal electrical supply system is interrupted.

[F] 415.11.11.1 Required electrical systems. Emergency power shall be provided for electrically operated equipment and connected control circuits for the following systems:

1. HPM exhaust ventilation systems.
2. HPM gas cabinet ventilation systems.
3. HPM exhausted enclosure ventilation systems.
4. HPM gas room ventilation systems.
5. HPM gas detection systems.
6. Emergency alarm systems.
7. Manual and automatic fire alarm systems.
8. Automatic sprinkler system monitoring and alarm systems.
9. Automatic alarm and detection systems for pyrophoric liquids and Class 3 water-reactive liquids required in Section 2705.2.3.4 of the *California Fire Code*.
10. Flow alarm switches for pyrophoric liquids and Class 3 water-reactive liquids cabinet exhaust ventilation systems required in Section 2705.2.3.4 of the *California Fire Code*.
11. Electrically operated systems required elsewhere in this code or in the *California Fire Code* applicable to the use, storage or handling of HPM.

[F] 415.11.11.2 Exhaust ventilation systems. Exhaust ventilation systems are allowed to be designed to operate at not less than one-half the normal fan speed on the emergency power system where it is demonstrated that the level of exhaust will maintain a safe atmosphere.

[F] 415.11.12 Automatic sprinkler system protection in exhaust ducts for HPM. An approved automatic sprinkler system shall be provided in exhaust ducts conveying gases, vapors, fumes, mists or dusts generated from HPM in accordance with Sections 415.11.12.1 through 415.11.12.3 and the *California Mechanical Code*.

[F] 415.11.12.1 Metallic and noncombustible nonmetallic exhaust ducts. An approved automatic sprinkler system shall be provided in metallic and noncombustible nonmetallic exhaust ducts where all of the following conditions apply:

1. Where the largest cross-sectional diameter is equal to or greater than 10 inches (254 mm).
2. The ducts are within the building.
3. The ducts are conveying flammable gases, vapors or fumes.

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[F] 415.11.12.2 Combustible nonmetallic exhaust ducts. Automatic sprinkler system protection shall be provided in combustible nonmetallic exhaust ducts where the largest cross-sectional diameter of the duct is equal to or greater than 10 inches (254 mm).

Exception: Ducts need not be provided with automatic sprinkler protection as follows:

1. Ducts listed or approved for applications without automatic sprinkler system protection.
2. Ducts not more than 12 feet (3658 mm) in length installed below ceiling level.

[F] 415.11.12.3 Automatic sprinkler locations. Automatic sprinklers shall be installed at 12-foot (3658 mm) intervals in horizontal ducts and at changes in direction. In vertical ducts, sprinklers shall be installed at the top and at alternate floor levels.

415.12 Group H occupancies located on the 11th story and above.

415.12.1 Fire – smoke barrier. *Any story containing a Group H occupancy on the 11th story and above shall be subdivided by a fire-smoke barrier constructed as a fire barrier having a fire resistance rating of not less than 2 hours and shall also comply with the smoke barrier requirements of Section 710. The 2-hour fire-smoke barrier shall be in accordance with Sections 415.12.1.1 through 415.12.1.5.*

415.12.1.1 *The 2-hour fire-smoke barrier shall be continuous from exterior wall to exterior wall.*

415.12.1.2 *The fire-smoke barrier shall divide the story so that the square footage on each side of the 2-hour fire-smoke barrier is not less than 30 percent of the total floor area.*

415.12.1.3 *A minimum of one door opening shall be provided in the 2-hour fire-smoke barrier for emergency access.*

415.12.1.4 *Each side of the 2-hour fire-smoke barrier shall be designed as a separate smoke zone designed in accordance with Section 909.5.*

415.12.1.5 *The area on each side of the 2-hour fire-smoke barrier shall be served by a minimum of one exit enclosure in accordance with Section 1022.*

415.13 Elevators and elevator lobbies on the 11th story and above. *Any story containing a Group H occupancy on the 11th story and above shall be provided with elevators and elevator lobbies in accordance with Sections 415.13.1 through 415.13.3.*

415.13.1 *An elevator that serves every story of the building shall be provided on each side of the 2-hour fire-smoke barrier.*

415.13.2 *An elevator lobby shall be provided on each side of the 2-hour fire-smoke barrier at each floor in accordance with Section 708.4. Exceptions to 708.4 shall not apply.*

415.13.3 *The elevator and its associated elevator lobbies and elevator machine rooms shall be pressurized in accordance with Section 909.5.*

SECTION 416—SPRAY APPLICATION OF FLAMMABLE FINISHES

[F] 416.1 General. The provisions of this section shall apply to the construction, installation and use of buildings and structures, or parts thereof, for the spray application of flammable finishes. Operations and equipment shall comply with the *California Fire Code*.

[F] 416.2 Spray rooms. Spray rooms shall be enclosed with not less than 1-hour fire barriers constructed in accordance with Section 707 or horizontal assemblies constructed in accordance with Section 711, or both. Floors shall be waterproofed and drained in an approved manner.

[F] 416.2.1 Construction. Walls and ceilings of spray rooms shall be constructed of noncombustible materials or the interior surface shall be completely covered with noncombustible materials. Aluminum shall not be used.

[F] 416.2.2 Surfaces. The interior surfaces of spray rooms shall be smooth and shall be so constructed to permit the free passage of exhaust air from all parts of the interior and to facilitate washing and cleaning, and shall be so designed to confine residues within the room.

[F] 416.2.3 Ventilation. Mechanical ventilation and interlocks with the spraying operation shall be in accordance with the *California Fire Code* and *California Mechanical Code*.

[F] 416.3 Spraying spaces. Spraying spaces shall be ventilated with an exhaust system to prevent the accumulation of flammable mist or vapors in accordance with the *California Mechanical Code*. Where such spaces are not separately enclosed, noncombustible spray curtains shall be provided to restrict the spread of flammable vapors.

[F] 416.3.1 Surfaces. The interior surfaces of spraying spaces shall be smooth; shall be so constructed to permit the free passage of exhaust air from all parts of the interior and to facilitate washing and cleaning; and shall be so designed to confine residues within the spraying space. Aluminum shall not be used.

[F] 416.4 Spray booths. Spray booths shall be designed, constructed and operated in accordance with the *California Fire Code.*

[F] 416.5 Fire protection. An automatic sprinkler system or fire-extinguishing system shall be provided in all spray rooms and spray booths, and shall be installed in accordance with Chapter 9.

SECTION 417—DRYING ROOMS

[F] 417.1 General. A drying room or dry kiln installed within a building shall be constructed entirely of approved noncombustible materials or assemblies of such materials regulated by the approved rules or as required in the general and specific sections of this chapter for special occupancies and where applicable to the general requirements of the *California Mechanical Code*.

[F] 417.2 Piping clearance. Overhead heating pipes shall have a clearance of not less than 2 inches (51 mm) from combustible contents in the dryer.

[F] 417.3 Insulation. Where the operating temperature of the dryer is 175°F (79°C) or more, metal enclosures shall be insulated from adjacent combustible materials by not less than 12 inches (305 mm) of airspace, or the metal walls shall be lined with $^1/_4$-inch (6.4 mm) insulating mill board or other approved equivalent insulation.

[F] 417.4 Fire protection. Drying rooms designed for high-hazard materials and processes, including special occupancies as provided for in Chapter 4, shall be protected by an approved automatic fire-extinguishing system complying with the provisions of Chapter 9.

SECTION 418—ORGANIC COATINGS

[F] 418.1 Building features. Manufacturing of organic coatings shall be done only in buildings that do not have pits or basements.

[F] 418.2 Location. Organic coating manufacturing operations and operations incidental to or connected therewith shall not be located in buildings having other occupancies.

[F] 418.3 Process mills. Mills operating with close clearances and that process flammable and heat-sensitive materials, such as nitrocellulose, shall be located in a detached building or noncombustible structure.

[F] 418.4 Tank storage. Storage areas for flammable and combustible liquid tanks inside of structures shall be located at or above grade and shall be separated from the processing area by not less than 2-hour fire barriers constructed in accordance with Section 707 or horizontal assemblies constructed in accordance with Section 711, or both.

[F] 418.5 Nitrocellulose storage. Nitrocellulose storage shall be located on a detached pad or in a separate structure or a room enclosed with not less than 2-hour fire barriers constructed in accordance with Section 707 or horizontal assemblies constructed in accordance with Section 711, or both.

[F] 418.6 Finished products. Storage rooms for finished products that are flammable or combustible liquids shall be separated from the processing area by not less than 2-hour fire barriers constructed in accordance with Section 707 or horizontal assemblies constructed in accordance with Section 711, or both.

SECTION 419—ARTIFICIAL DECORATIVE VEGETATION

[F] 419.1 Artificial decorative vegetation. Artificial decorative vegetation exceeding 6 feet (1830 mm) in height and permanently installed outdoors within 5 feet (1524 mm) of a building, or on the roof of a building, shall comply with Section 321.1 of the *California Fire Code.*

Exception: Artificial decorative vegetation located more than 30 feet (9144 mm) from the exterior wall of a building.

➡ SECTION 420—GROUPS R-1, R-2, *R-2.1, R-2.2,* R-3, *R-3.1* AND R-4

➡ **420.1 General.** Occupancies in Groups R-1, R-2, *R-2.1, R-2.2,* R-3, *R-3.1* and R-4 shall comply with the provisions of Sections 420.1 through 420.11 and other applicable provisions of this code.

420.2 Separation walls. Walls separating dwelling units in the same building, walls separating sleeping units in the same building, walls separating dwelling units from sleeping units in the same building and walls separating dwelling or sleeping units from other occupancies contiguous to them in the same building shall be constructed as fire partitions in accordance with Section 708.

420.3 Horizontal separation. Floor assemblies separating dwelling units in the same buildings, floor assemblies separating sleeping units in the same building, floor assemblies separating dwelling units from sleeping units in the same building and floor assemblies separating dwelling or sleeping units from other occupancies contiguous to them in the same building shall be constructed as horizontal assemblies in accordance with Section 711.

[F] 420.4 Automatic sprinkler system. Group R occupancies shall be equipped throughout with an automatic sprinkler system in accordance with Section 903.2.8. *Group R-2.2 shall be equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1. Group R-2.1* occupancies shall be equipped throughout with an automatic sprinkler system in accordance with Section 903.2.6. Quick-response or residential automatic sprinklers shall be installed in accordance with Section 903.3.2.

[F] 420.5 Fire alarm systems and smoke alarms. Fire alarm systems and smoke alarms shall be provided in Group R-1, R-2 *and R-2.1* occupancies in accordance with Sections 907.2.6, 907.2.8 and 907.2.9 *and 907.2.10*, respectively. Single- or multiple-station smoke alarms shall be provided in Groups R-2, *R-2.1,* R-3 and R-4 in accordance with Section 907.2.11. *Group R-2.2 shall be equipped throughout with an automatic fire alarm systems per 907.2.9.2 and shall have a manual fire alarm pull station at the 24-hour staff watch office.*

420.6 Smoke barriers in Group *R-2.1*. Smoke barriers shall be provided in Group *R-2.1* to subdivide every story used by persons receiving care, treatment or sleeping and to provide other stories with an occupant load of 50 or more persons, into not fewer than two smoke compartments. Such stories shall be divided into smoke compartments with an area of not more than 22,500 square feet (2092 m^2) and the distance of travel from any point in a smoke compartment to a smoke barrier door shall not exceed 200 feet (60 960 mm). The smoke barrier shall be in accordance with Section 709.

420.6.1 Smoke barrier in Group R-2.2. *Occupancies in Group R-2.2 shall have smoke barriers complying with Sections 709 to divide every story occupied by residents for sleeping, into no fewer than two smoke compartments.*

Exception: *Spaces having a direct exit to a public way.*

***420.6.2* Refuge area.** Refuge areas shall be provided within each smoke compartment. The size of the refuge area shall accommodate the occupants and care recipients from the adjoining smoke compartment. Where a smoke compartment is adjoined by two or more smoke compartments, the minimum area of the refuge area shall accommodate the largest occupant load of the adjoining compartments. The size of the refuge area shall provide the following:

1. Not less than 15 net square feet (1.4 m^2) for each care recipient.
2. Not less than 6 net square feet (0.56 m^2) for other occupants.

Areas or spaces permitted to be included in the calculation of the refuge area are corridors, lounge or dining areas and other low-hazard areas.

420.7 *Reserved.*

420.8 *Reserved.*

420.9 Domestic cooking appliances. In Group *R-2.1* occupancies, installation of cooking appliance used in domestic cooking facilities shall comply with all of the following:

1. The types of cooking appliances permitted shall be limited to ovens, cooktops, ranges, warmers and microwaves.
2. Domestic cooking hoods installed and constructed in accordance with the *California Mechanical Code* shall be provided over cooktops or ranges. <
3. Cooktops and ranges shall be protected in accordance with Section 904.15.
4. A shutoff for the fuel and electrical supply to the cooking equipment shall be provided in a location to which only staff has access.
5. A timer shall be provided that automatically deactivates the cooking appliances within a period of not more than 120 minutes.
6. A portable fire extinguisher shall be provided. Installation shall be in accordance with Section 906 and the extinguisher shall be located within a 30-foot (9144 mm) distance of travel from each domestic cooking appliance.

Exceptions:

1. Cooking facilities provided within care recipients' individual dwelling units are not required to comply with this section.
2. Cooktops and ranges used for care-recipient training or nutritional counseling are not required to comply with Item 3 of this section.

420.10 Group R cooking facilities. In Group R occupancies, cooking appliances used for domestic cooking operations shall be in accordance with the *California Mechanical Code*. <

420.11 Group R-2 dormitory cooking facilities. Domestic cooking appliances for use by residents of Group R-2 college dormitories shall be in accordance with Sections 420.11.1 and 420.11.2.

420.11.1 Cooking appliances. Where located in Group R-2 college dormitories, domestic cooking appliances for use by residents shall be in compliance with all of the following:

1. The types of domestic cooking appliances shall be limited to ovens, cooktops, ranges, warmers, coffee makers and microwaves.
2. Domestic cooking appliances shall be limited to approved locations.
3. Cooktops and ranges shall be protected in accordance with Section 904.15.
4. Cooktops and ranges shall be provided with a domestic cooking hood installed and constructed in accordance with the *California Mechanical Code*. *Kitchen range hoods shall also be rated for sound and meet field verification requirements in the California Energy Code for low-rise and high-rise residential buildings.* <

420.11.2 Cooking appliances in sleeping rooms. Cooktops, ranges and ovens shall not be installed or used in sleeping rooms.

420.12 [HCD 1] Construction waste management. *Recycle and/or salvage for reuse a minimum of 65 percent of the nonhazardous construction and demolition waste in accordance with the California Green Building Standards Code (CALGreen), Chapter 4, Division 4.4.*

420.13 Special provisions for residential hotels. [HCD 1 & HCD 1-AC]

420.13.1 Locking mail receptacles. *A locking mail receptacle for each residential unit shall be provided in all residential hotels pursuant to the requirements specified in Health and Safety Code Section 17958.3.*

420.14 [HCD 1] Electric vehicle (EV) charging for new construction. *Newly constructed Group R-1, R-2 and R-3 buildings shall meet requirements for electric vehicle charging in accordance with the California Green Building Standards Code (CALGreen), Chapter 4, Division 4.1.*

420.15 Licensed 24-hour care facilities in a Group R-2.1, R-3.1 or R-4 occupancy. *See Section 435 for Special Provisions for licensed 24-hour care facilities in a Group R-2.1, R-3.1 or R-4 occupancy.*

420.16 Electronic monitoring. *In Group R-2.2 occupancies there shall be continuous electronic supervision via CCTV system camera coverage and monitoring the following areas: corridors, storage rooms over 100 square feet, central kitchen and main entryway of the facility.*

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SECTION 421—HYDROGEN FUEL GAS ROOMS

[F] 421.1 General. Where required by the *California Fire Code*, hydrogen fuel gas rooms shall be designed and constructed in accordance with Sections 421.1 through 421.7.

[F] 421.2 Location. Hydrogen fuel gas rooms shall not be located below grade.

[F] 421.3 Design and construction. Hydrogen fuel gas rooms not classified as Group H shall be separated from other areas of the building in accordance with Section 509.1.

[F] 421.3.1 Pressure control. Hydrogen fuel gas rooms shall be provided with a ventilation system designed to maintain the room at a negative pressure in relation to surrounding rooms and spaces.

[F] 421.3.2 Windows. Operable windows in interior walls shall not be permitted. Fixed windows shall be permitted where in accordance with Section 716.

[F] 421.4 Exhaust ventilation. Hydrogen fuel gas rooms shall be provided with mechanical exhaust ventilation in accordance with > the applicable provisions of the *California Mechanical Code*.

[F] 421.5 Gas detection system. Hydrogen fuel gas rooms shall be provided with a gas detection system that complies with Sections 421.5.1, 421.5.2, and 916.

[F] 421.5.1 System activation. Activation of a gas detection alarm shall result in both of the following:

1. Initiation of distinct audible and visible alarm signals both inside and outside of the hydrogen fuel gas room.
2. Automatic activation of the mechanical exhaust ventilation system.

[F] 421.5.2 Failure of the gas detection system. Failure of the gas detection system shall automatically activate the mechanical exhaust ventilation system, stop hydrogen generation, and cause a trouble signal to sound at an approved location.

[F] 421.6 Explosion control. Explosion control shall be provided where required by Section 414.5.1.

[F] 421.7 Standby power. Mechanical ventilation and gas detection systems shall be provided with a standby power system in accordance with Section 2702.

SECTION 422—AMBULATORY CARE FACILITIES

422.1 General. Occupancies classified as ambulatory care facilities shall comply with the provisions of Sections 422.1 through 422.7 and other applicable provisions of this code. ***[For OSHPD 3]*** *For clinics licensed by California Department of Public Health also refer to Section 1226.2.*

422.2 Separation. Ambulatory care facilities where the potential for four or more care recipients are to be incapable of self-preservation at any time shall be separated from adjacent spaces, corridors or tenants with a *1-hour* fire *barrier* installed in accordance with Section *707*.

422.3 Smoke compartments. Where the aggregate area of one or more ambulatory care facilities is greater than 10,000 square feet (929 m^2) on one story, the story shall be provided with a smoke barrier to subdivide the story into not fewer than two smoke compartments. The area of any one such smoke compartment shall be not greater than 22,500 square feet (2092 m^2). The distance of travel from any point in a smoke compartment to a smoke barrier door shall be not greater than 200 feet (60 960 mm). The smoke barrier shall be installed in accordance with Section 709 with the exception that smoke barriers shall be continuous from outside wall to an outside wall, a floor to a floor, or from a smoke barrier to a smoke barrier or a combination thereof.

422.3.1 Means of egress. Where ambulatory care facilities require smoke compartmentation in accordance with Section 422.3, the fire safety evacuation plans provided in accordance with Section 1002.2 shall identify the building components necessary to support a defend-in-place emergency response in accordance with Sections 403 and 404 of the *California Fire Code*.

422.3.2 Refuge area. Not less than 30 net square feet (2.8 m^2) for each nonambulatory care recipient *and not less than 15 net square feet (1.4 m^2) per ambulatory occupant* shall be provided within the aggregate area of corridors, care recipient rooms, treatment rooms, lounge or dining areas and other low-hazard areas within each smoke compartment. Each occupant of an ambulatory care facility shall be provided with access to a refuge area without passing through or utilizing adjacent tenant spaces.

422.3.3 Independent egress. A means of egress shall be provided from each smoke compartment created by smoke barriers without having to return through the smoke compartment from which means of egress originated.

422.3.4 Distance of travel. *The distance of travel between any point in an ambulatory care facility and an exit shall be not greater than 200 feet (60 960 mm).*

[F] 422.4 Automatic sprinkler systems. Automatic sprinkler systems shall be provided for ambulatory care facilities in accordance with Section 903.2.2.

[F] 422.5 Fire alarm systems. A fire alarm system shall be provided for ambulatory care facilities in accordance with Section 907.2.2.

[F] 422.6 Electrical systems. In ambulatory care facilities, the essential electrical system for electrical components, equipment and systems shall be designed and constructed in accordance with the provisions of Chapter 27 and *California Electrical Code Article 517.*

422.7 Domestic cooking. *In fully sprinklered buildings, the installation* of cooking appliances used in domestic cooking facilities shall comply with all of the following:

1. The types of cooking appliances permitted are limited to ovens, cooktops, ranges, warmers and microwaves.

2. Domestic cooking hoods installed and constructed in accordance with Section *504.3* of the *California Mechanical Code* shall be provided over cooktops or ranges.
3. A shutoff for the fuel and electrical supply to the cooking equipment shall be provided in a location to which only staff has access.
4. A timer shall be provided that automatically deactivates the cooking appliances within a period of not more than 120 minutes.
5. A portable fire extinguisher shall be provided. Installation shall be in accordance with Section 906 and the extinguisher shall be located within a 30-foot (9144 mm) distance of travel from each domestic cooking appliance.
6. *The area containing the domestic cooking appliances shall be separated from all other areas by fire partitions constructed complying with Section 708.*

SECTION 423—STORM SHELTERS

423.1 General. This section applies to the design and construction of storm shelters constructed as separate detached buildings or constructed as rooms or spaces within buildings for the purpose of providing protection from tornadoes hurricanes and other severe windstorms during the storm. This section specifies where storm shelters are required and provides requirements for the design and construction of storm shelters. Design of facilities for use as emergency shelters after the storm are outside the scope of ICC 500 and shall comply with Table 1604.5 as a Risk Category IV Structure.

423.2 Construction. Storm shelters shall be constructed in accordance with this code and ICC 500 and shall be designated as hurricane shelters, tornado shelters, or combined hurricane and tornado shelters. Buildings or structures that are also designated as emergency shelters shall also comply with Table 1604.5 as Risk Category IV structures.

Any storm shelter not required by this section shall be permitted to be constructed, provided that such structures meet the requirements of this code and ICC 500.

423.3 Occupancy classification. The occupancy classification for a storm shelter shall be determined in accordance with this section.

423.3.1 Dedicated storm shelters. A facility designed to be occupied solely as a storm shelter shall be classified as Group A-3 for the determination of requirements other than those covered in ICC 500.

Exceptions:

1. The occupancy category for dedicated storm shelters with a design occupant capacity of less than 50 persons as determined in accordance with ICC 500 shall be in accordance with Section 303.
2. The occupancy category for a dedicated residential storm shelter shall be the Group R occupancy served.

423.3.2 Storm shelters within host buildings. Where designated storm shelters are constructed as a room or space within a host building that will normally be occupied for other purposes, the requirements of this code for the occupancy of the building, or the individual rooms or spaces thereof, shall apply unless otherwise required by ICC 500.

423.4 Critical emergency operations. In areas where the shelter design wind speed for tornados in accordance with Figure 304.2(1) of ICC 500 is 250 mph, 911 call stations, emergency operation centers and fire, rescue, ambulance and police stations shall comply with Table 1604.5 as a Risk Category IV structure and shall be provided with a storm shelter constructed in accordance with ICC 500.

423.4.1 Design occupant capacity. The required design occupant capacity of the storm shelter shall include the critical emergency operations on the site and shall be the total occupant load of offices and the number of beds.

Exceptions:

1. Where approved by the building official, the actual number of occupants for whom each occupied space, floor or building is designed, although less than that determined by occupant load calculation, shall be permitted to be used in the determination of the required design occupant capacity for the storm shelter.
2. Where a new building is being added on an existing site, and where the new building is not of sufficient size to accommodate the required design occupant capacity of the storm shelter for all of the buildings on the site, the storm shelter shall accommodate not less than the required occupant capacity of the new building.
3. Where approved by the building official, the required design occupant capacity of the shelter shall be permitted to be reduced by the design occupant capacity of any existing storm shelters on the site.

423.4.2 Location. Storm shelters shall be located within the building they serve or shall be located where the distance of travel from not fewer than one exterior door of each building to a door of the shelter serving that building does not exceed 1,000 feet (305 m), unless otherwise approved.

423.5 Group E occupancies. In areas where the shelter design wind speed for tornados is 250 mph in accordance with Figure 304.2(1) of ICC 500, all Group E occupancies with an occupant load of 50 or more shall have a storm shelter constructed in accordance with ICC 500.

Exceptions:

1. Group E day care facilities.
2. Group E occupancies accessory to places of religious worship.
3. Buildings meeting the requirements for shelter design in ICC 500.

423.5.1 Design occupant capacity. The required design occupant capacity of the storm shelter shall include all of the buildings on the site and shall be the total occupant load of the classrooms, vocational rooms and offices in the Group E occupancy.

Exceptions:

1. Where approved by the building official, the actual number of occupants for whom each occupied space, floor or building is designed, although less than that determined by occupant load calculation, shall be permitted to be used in the determination of the required design occupant capacity for the storm shelter.
2. Where a new building is being added on an existing Group E site, and where the new building is not of sufficient size to accommodate the required design occupant capacity of the storm shelter for all of the buildings on the site, the storm shelter shall accommodate not less than the required occupant capacity for the new building.
3. Where approved by the building official, the required design occupant capacity of the shelter shall be permitted to be reduced by the design occupant capacity of any existing storm shelters on the site.

423.5.2 Location. Storm shelters shall be located within the buildings they serve or shall be located where the distance of travel from not fewer than one exterior door of each building to a door of the shelter serving that building does not exceed 1,000 feet (305 m).

SECTION 424—PLAY STRUCTURES

[BF] 424.1 General. Play structures installed inside all occupancies covered by this code that exceed 10 feet (3048 mm) in height or 150 square feet (14 m^2) in area shall comply with Sections 424.2 through 424.5.

[BF] 424.2 Materials. Play structures shall be constructed of noncombustible materials or of combustible materials that comply with the following:

1. Fire-retardant-treated wood complying with Section 2303.2.
2. Light-transmitting plastics complying with Section 2606.
3. Foam plastics (including the pipe foam used in soft-contained play equipment structures) having a maximum heat-release rate not greater than 100 kilowatts when tested in accordance with UL 1975 or when tested in accordance with NFPA 289, using the 20 kW ignition source.
4. Aluminum composite material (ACM) meeting the requirements of Class A interior finish in accordance with Chapter 8 when tested as an assembly in the maximum thickness intended for use.
5. Textiles and films complying with the fire propagation performance criteria contained in Test Method 1 or Test Method 2, as appropriate, of NFPA 701.
6. Plastic materials used to construct rigid components of soft-contained play equipment structures (such as tubes, windows, panels, junction boxes, pipes, slides and decks) exhibiting a peak rate of heat release not exceeding 400 kW/ m^2 when tested in accordance with ASTM E1354 at an incident heat flux of 50 kW/m^2 in the horizontal orientation at a thickness of 6 mm.
7. Ball pool balls, used in soft-contained play equipment structures, having a maximum heat-release rate not greater than 100 kilowatts when tested in accordance with UL 1975 or when tested in accordance with NFPA 289, using the 20 kW ignition source. The minimum specimen test size shall be 36 inches by 36 inches (914 mm by 914 mm) by an average of 21 inches (533 mm) deep, and the balls shall be held in a box constructed of galvanized steel poultry netting wire mesh.
8. Foam plastics shall be covered by a fabric, coating or film meeting the fire propagation performance criteria contained in Test Method 1 or Test Method 2, as appropriate, of NFPA 701.
9. The floor covering placed under the play structure shall exhibit a Class I interior floor finish classification, as described in Section 804, when tested in accordance with ASTM E648 or NFPA 253.
10. Interior finishes for structures exceeding 600 square feet (56 m^2) in area or 10 feet (3048 mm) in height shall have a flame spread index not greater than that specified in Table 803.13 for the occupancy group and location designated. Interior wall and ceiling finish materials tested in accordance with NFPA 286 and meeting the acceptance criteria of Section 803.1.1.1, shall be permitted to be used where a Class A classification in accordance with ASTM E84 or UL 723 is required.

[F] 424.3 Fire protection. Play structures shall be provided with the same level of approved fire suppression and detection devices required for other structures in the same occupancy.

[BF] 424.4 Separation. Play structures shall have a horizontal separation from building walls, partitions and from elements of the means of egress of not less than 5 feet (1524 mm). Play structures shall have a horizontal separation from other play structures of not less than 20 feet (6090 mm).

[BF] 424.5 Area limits. Play structures shall be not greater than 600 square feet (56 m^2) in area, unless a special investigation, acceptable to the building official, has demonstrated adequate fire safety.

[BF] 424.5.1 Design. Play structures exceeding 600 square feet (56 m^2) in area or 10 feet (3048 mm) in height shall be designed in accordance with Chapter 16.

SECTION 425—HYPERBARIC FACILITIES

425.1 Hyperbaric facilities. Hyperbaric facilities shall meet the requirements contained in Chapter 14 of NFPA 99.

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SECTION [F] 426—COMBUSTIBLE DUSTS, GRAIN PROCESSING AND STORAGE

[F] 426.1 General. The provisions of Sections 426.1.1 through 426.1.7 shall apply to buildings in which materials that produce combustible dusts are stored or handled. Buildings that store or handle combustible dusts shall comply with the applicable provisions of the *California Fire Code*. Where required by the fire code official, NFPA 652 and the applicable provisions of NFPA 61, NFPA 85, NFPA 120, NFPA 484, NFPA 654, NFPA 655 and NFPA 664 shall apply.

[F] 426.1.1 Type of construction and height exceptions. Buildings shall be constructed in compliance with the height, number of stories and area limitations specified in Sections 504 and 506; except that where erected of Type I or II construction, the heights and areas of grain elevators and similar structures shall be unlimited, and where of Type IV construction, the maximum building height shall be 65 feet (19 812 mm) and except further that, in isolated areas, the maximum building height of Type IV structures shall be increased to 85 feet (25 908 mm).

[F] 426.1.2 Grinding rooms. Every room or space occupied for grinding or other operations that produce combustible dusts in such a manner that the room or space is classified as a Group H-2 occupancy shall be enclosed with fire barriers constructed in accordance with Section 707 or horizontal assemblies constructed in accordance with Section 711, or both. The fire-resistance rating of the enclosure shall be not less than 2 hours where the area is not more than 3,000 square feet (279 m^2), and not less than 4 hours where the area is greater than 3,000 square feet (279 m^2).

[F] 426.1.3 Conveyors. Conveyors, chutes, piping and similar equipment passing through the enclosures of rooms or spaces shall be constructed dirt tight and vapor tight, and be of approved noncombustible materials complying with Chapter 30.

[F] 426.1.4 Explosion control. Explosion control shall be provided as specified in the *California Fire Code*, or spaces shall be equipped with the equivalent mechanical ventilation complying with the *California Mechanical Code*.

[F] 426.1.5 Grain elevators. Grain elevators, malt houses and buildings for similar occupancies shall not be located 30 feet (9144 mm) or less from interior lot lines or structures on the same lot, except where erected along a railroad right-of-way.

[F] 426.1.6 Coal pockets. Coal pockets located less than 30 feet (9144 mm) from interior lot lines or from structures on the same lot shall be constructed of not less than Type IB construction. Where more than 30 feet (9144 mm) from interior lot lines, or where erected along a railroad right-of-way, the minimum type of construction of such structures not more than 65 feet (19 812 mm) in building height shall be Type IV.

[F] 426.1.7 Tire rebuilding. Buffing operations shall be located in a room separated from the remainder of the building housing the tire rebuilding or tire recapping operation by a 1-hour fire barrier.

Exception: Buffing operations are not required to be separated where all of the following conditions are met:

1. Buffing operations are equipped with an approved continuous automatic water-spray system directed at the point of cutting action.
2. Buffing machines are connected to particle-collecting systems providing a minimum air movement of 1,500 cubic feet per minute (cfm) (0.71 m^3/s) in volume and 4,500 feet per minute (fpm) (23 m/s) in-line velocity.
3. The collecting system shall discharge the rubber particles to an approved outdoor noncombustible or fire-resistant container, which is emptied at frequent intervals to prevent overflow.

SECTION 427—MEDICAL GAS SYSTEMS

[F] 427.1 General. Medical gases at health care-related facilities intended for patient or veterinary care shall comply with Sections 427.2 through 427.2.3 in addition to the requirements of Chapter 53 of the *California Fire Code*.

[F] 427.2 Interior supply location. Medical gases shall be located in areas dedicated to the storage of such gases without other storage or uses. Rooms containing medical gases shall be labeled in accordance with NFPA 99. Where containers of medical gases in quantities greater than the permitted amount are located inside the buildings, they shall be located in a 1-hour exterior room, 1-hour interior room or a gas cabinet in accordance with Section 427.2.1, 427.2.2 or 427.2.3, respectively. Rooms or areas where medical gases are stored or used in quantities exceeding the maximum allowable quantity per control area as set forth in Tables 307.1(1) and 307.1(2) shall be in accordance with Group H occupancies.

[F] 427.2.1 One-hour exterior room. A 1-hour exterior room shall be a room or enclosure separated from the remainder of the building by fire barriers constructed in accordance with Section 707 or horizontal assemblies constructed in accordance with Section 711, or both, with a fire-resistance rating of not less than 1 hour. Openings between the room or enclosure and interior spaces shall be provided with self-closing smoke- and draft-control assemblies having a fire protection rating of not less than 1 hour. Rooms shall have not less than one exterior wall that is provided with not less than two vents. Each vent shall have a minimum free air opening of not less than 36 square inches (232 cm^2) for each 1,000 cubic feet (28 m^3) at normal temperature and pressure (NTP) of gas stored in the room and shall be not less than 72 square inches (465 cm^2) in aggregate free opening area. One vent shall be within 6 inches (152 mm) of the floor and one shall be within 6 inches (152 mm) of the ceiling. Rooms shall be provided with not fewer than one automatic fire sprinkler to provide container cooling in case of fire.

[F] 427.2.2 One-hour interior room. Where an exterior wall cannot be provided for the room, a 1-hour interior room shall be provided and shall be a room or enclosure separated from the remainder of the building by fire barriers constructed in accordance with Section 707 or horizontal assemblies constructed in accordance with Section 711, or both, with a fire-resistance rating of not less than 1 hour. Openings between the room or enclosure and interior spaces shall be provided with self-closing smoke- and draft-control assemblies having a fire protection rating of not less than 1 hour. An automatic sprinkler system shall be installed

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within the room. The room shall be exhausted through a duct to the exterior. Supply and exhaust ducts shall be enclosed in a 1-hour rated shaft enclosure from the room to the exterior. Approved mechanical ventilation shall comply with the *California Mechanical Code* and be provided with a minimum rate of 1 cubic foot per minute per square foot (0.00508 $m^3/s/m^2$) of the area of the room.

[F] 427.2.3 Gas cabinets. Gas cabinets shall be constructed in accordance with Section 5003.8.6 of the *California Fire Code* and shall comply with the following:

1. Cabinets shall be exhausted to the exterior through a dedicated exhaust duct system installed in accordance with Chapter 5 of the *California Mechanical Code*.
2. Supply and exhaust ducts shall be enclosed in a 1-hour rated shaft enclosure from the cabinet to the exterior. The average velocity of ventilation at the face of access ports or windows shall be not less than 200 feet per minute (1.02 m/s) with a minimum of 150 feet per minute (0.76 m/s) at any point of the access port or window.
3. Cabinets shall be provided with an automatic sprinkler system internal to the cabinet.

SECTION 435—SPECIAL PROVISIONS FOR LICENSED 24-HOUR CARE FACILITIES IN A GROUP R-2.1, R-3.1, R-4 [SFM]

435.1 Scope. *The provisions of this section shall apply to 24-hour care facilities in a Group R-2.1, R-3.1 or R-4 occupancy licensed by a governmental agency.*

435.2 General. *The provisions in this section shall apply in addition to general requirements in this code.*

435.2.1 *Restraint shall not be practiced in a Group R-2.1, R-3.1 or R-4 Occupancies.*

Exception: *Occupancies which meet all the requirements for a Group I-3 Occupancy.*

435.2.2 *Pursuant to Health and Safety Code Section 13133, regulations of the state fire marshal pertaining to occupancies classified as Residential Facilities (RF) and Residential Care Facilities for the Elderly (RCFE) shall apply uniformly throughout the state and no city, county, city and county, including a charter city or charter county, or fire protection district shall adopt or enforce any ordinance or local rule or regulation relating to fire and panic safety which is inconsistent with these regulations. A city, county, city and county, including a charter city or charter county may pursuant to Health and Safety Code Section 13143.5, or a fire protection district may pursuant to Health and Safety Code Section 13869.7, adopt standards more stringent than those adopted by the state fire marshal that are reasonably necessary to accommodate local climate, geological or topographical conditions relating to roof coverings for Residential Care Facilities for the Elderly.*

Exception: *Local regulations relating to roof coverings in facilities licensed as a residential care facility for the elderly (RCFE) per Health and Safety Code Section 13133.*

435.3 Building height and area provisions.

435.3.1 *Group R-2.1, R-3.1 and R-4 shall be constructed in accordance with Table 504.3.*

435.3.2 Limitations six or less clients. *Group R-3.1 occupancies where nonambulatory clients are housed above the first story, having more than two stories in height or having more than 3,000 square feet (279 m^2) of floor area above the first story shall not be of less than one-hour fire-resistance-rated construction throughout.*

In Group R3.1 occupancies housing a bedridden client, the client sleeping room shall not be located above or below the first story.

Exception: *Clients who become bedridden as a result of a temporary illness as defined in Health and Safety Code Sections 1566.45, 1568.0832 and 1569.72. A temporary illness is an illness, which persists for 14 days or less. A bedridden client may be retained in excess of the 14 days upon approval by the Department of Social Services and may continue to be housed on any story in a Group R-3.1 occupancy classified as a licensed residential facility.*

Every licensee admitting or retaining a bedridden resident shall, within 48 hours of the resident's admission or retention in the facility, notify the local fire authority with jurisdiction of the estimated length of time the resident will retain his or her bedridden status in the facility.

435.3.3 Limitations seven or more clients. *Group R-4 occupancies where nonambulatory clients are housed above the first story and there is more than 3,000 square feet (279 m^2) of floor area above the first story or housing not more than 16 clients above the first story shall be constructed of not less than one-hour fire-resistance-rated construction throughout.*

435.3.4 Nonambulatory elderly clients. *Group R-4 occupancies housing nonambulatory elderly clients shall be of not less than one-hour fire-resistance-rated construction throughout.*

435.4 Type of construction provisions.

435.4.1 *Group R-2.1, occupancies are not permitted in nonfire-resistance-rated construction, see Health and Safety Code Section 13131.5.*

435.5 Fire-resistance-rated construction provisions.

435.5.1 Smoke barriers required. *Group R-2.1 and R-4 occupancies licensed as a Residential Care Facility (RCF) with individual floor areas over 6,000 square feet (557 m^2) per floor, shall be provided with smoke barriers, constructed in accordance with Section 709.*

Group R-2.1 occupancies housing bedridden clients shall be provided with smoke barriers constructed in accordance with Section 709 regardless of the number of clients.

When smoke barriers are required, the area within a smoke compartment shall not exceed 22,500 square feet (2090 m^2) nor shall its travel distance exceed 200 feet (60 960 mm). Such smoke barriers shall divide the floor as equally as possible.

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435.5.2 Smoke partitions. *Group R-2.1 occupancies where smoke partitions are required, framing shall be covered with noncombustible materials having an approved thermal barrier with an index of not less than 15 in accordance with FM 4880, UL 1040, NFPA 286 or UL 1715.*

435.5.3 Independent egress. *At least two means of egress shall be provided from each smoke compartment created by smoke barriers. Means of egress may pass through adjacent compartments provided it does not return through the smoke compartment from which means of egress originated. Smoke compartments that do not contain an exit shall be provided with direct access to not less than two adjacent smoke compartments.*

435.6 Interior finish provisions.

435.6.1 Interior wall and ceiling finish. *Group R-3.1 occupancies housing a bedridden client shall comply with interior wall and ceiling finish requirements specified for Group I-2 occupancies in Table 803.13.*

435.6.2 Safety padding. *Padding material used on walls, floors and ceilings in Group I and R-2.1 occupancies shall be of an approved type tested in accordance with the procedures established by State Fire Marshal Standard 12-8-100, Room Fire Test for Wall and Ceiling Materials, California Code of Regulations, Title 24, Part 12.*

435.7 Fire protection system provisions.

435.7.1 Automatic sprinkler systems in Group R-2.1, R-3.1 and R-4 occupancies. *An automatic sprinkler system shall be installed where required in Section 903.*

435.7.2 Fire alarm systems in Group R-2.1 and R-4 occupancies. *An approved fire alarm system shall be installed where required in Section 907.*

435.7.3 Smoke alarms in Groups R-2.1, R-3.1 and R-4 occupancies. *Smoke alarms shall be installed where required in Section 907.2.11.2.*

435.7.4 Hearing impaired. *See Section 907.5.2.3.4.*

435.8 Means of egress provisions.

435.8.1 General. *In addition to the general means of egress requirements of Chapter 10, this section shall apply to Group R-2.1, R-3.1 and R-4 occupancies.*

435.8.2 Number of exits.

435.8.2.1 *Group R-2.1, R-3.1 and R-4 occupancies shall have a minimum of two exits.*

Exception: *Ancillary use areas or occupancies shall have egress as required by Section 1021.*

435.8.3 Egress arrangements.

435.8.3.1 *Egress through adjoining dwelling units shall not be permitted.*

435.8.3.2 Group R-3.1 occupancies housing non- ambulatory clients. *In a Group R-3.1 occupancy, bedrooms used by nonambulatory clients shall have access to at least one of the required exits which shall conform to one of the following:*

1. *Egress through a hallway or area into a bedroom in the immediate area which has an exit directly to the exterior and the corridor/hallway is constructed consistent with the dwelling unit interior walls. The hallway shall be separated from common areas by a solid wood door not less than $1^{3}/_{8}$ inch (35 mm) in thickness, maintained self-closing or shall be automatic closing by actuation of a smoke detector installed in accordance with Section 716.2.6.*
2. *Egress through a hallway which has an exit directly to the exterior. The hallway shall be separated from the rest of the house by a wall constructed consistent with the dwelling unit interior walls and opening protected by a solid wood door not less than $1^{3}/_{8}$ inch (35 mm) in thickness, maintained self-closing or shall be automatic closing by actuation of a smoke detector installed in accordance with Section 716.2.6.*
3. *Direct exit from the bedroom to the exterior shall be of a size as to permit the installation of a door not less than 3 feet (914 mm) in width and not less than 6 feet 8 inches (2032 mm) in height. When installed, doors shall be capable of opening at least 90 degrees and shall be so mounted that the clear width of the exit way is not less than 32 inches (813 mm).*
4. *Egress through an adjoining bedroom which exits to the exterior.*

435.8.3.3 Group R-3.1 occupancies housing only one bedridden client. *In Group R-3.1 occupancies housing a bedridden client and not provided with an approved automatic sprinkler system, all of the following shall apply:*

1. *In Group R-3.1 occupancies housing a bedridden client, a direct exit to the exterior of the residence shall be provided from the client sleeping room.*
2. *Doors to a bedridden client's sleeping room shall be of a self-closing, positive latching $1\text{-}^{3}/_{8}$ inch solid wood door. Such doors shall be provided with a gasket so installed as to provide a seal where the door meets the jam on both sides and across the top. Doors shall be maintained self-closing or shall be automatic closing by actuation of a smoke alarm in accordance with Section 716.2.6.*
3. *Group R-3.1 occupancies housing a bedridden client, shall not have a night latch, dead bolt, security chain or any similar locking device installed on any interior door leading from a bedridden client's sleeping room to any interior area such as a corridor, hallway and or general use areas of the residence in accordance with Chapter 10.*
4. *The exterior exit door to a bedridden client's sleeping room shall be operable from both the interior and exterior of the residence.*

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5. *Every required exit doorway from a bedridden client sleeping room shall be of a size as to permit the installation of a door not less than 3 feet (914 mm) in width and not less than 6 feet 8 inches (2032 mm) in height. When installed in exit doorways, exit doors shall be capable of opening at least 90 degrees and shall be so mounted that the clear width of the exit way is not less than 32 inches (813 mm).*

Note: *A sliding glass door can be used as an exterior exit doorway as long as it is operable from the inside and outside and the clear width of the exit way is not less than 32 inches (813 mm).*

435.8.3.4 Intervening rooms. *A means of exit shall not pass through more than one intervening room. A means of egress shall not pass through kitchens, storerooms, closets, garages or spaces used for similar purposes.*

Exception: *Kitchens which do not form separate rooms by construction.*

435.8.4 Corridors.

435.8.4.1 *Unless specified by Section 435.8.4, corridors serving Group R-2.1 and Group R-4 occupancies shall comply with Section 1020.1.*

In Group R-2.1 occupancies provided with fire sprinklers throughout and which are required to have rated corridors, door closers need not be installed on doors to client sleeping rooms.

435.8.4.2 *The minimum clear width of a corridor shall be as follows:*

1. *Group R-2.1 occupancies shall have 60 inches (1524 mm) on floors housing nonambulatory clients and 44 inches (1118 mm) on floors housing only ambulatory clients.*
2. *Group R-4 occupancies shall have 44 inches (1118 mm) on floors housing clients.*

Exceptions:

1. *Corridors serving an occupant load of 10 or less shall not be less than 36 inches (914 mm) in width.*
2. *Corridors serving ambulatory persons only and having an occupant load of 49 or less shall not be less than 36 inches (914 mm) in width.*

435.8.4.3 *In a Group R-2.1 and Group R-4 occupancies having smoke barriers, cross-corridor doors in corridors 6 feet (1829 mm) or less in width shall have, as a minimum, a door 36 inches (914 mm) in width.*

435.8.5 Changes in level. *In Group R-3.1 occupancies housing nonambulatory clients interior changes in level up to 0.25 inch (6 mm) may be vertical and without edge treatment. Changes in level between 0.25 inch (6 mm) and 0.5 inch (12.7 mm) shall be beveled with a slope no greater than 1 unit vertical in 2 units horizontal (50 percent slope). Changes in level greater than 0.5 inch (12.7 mm) shall be accomplished by means of a ramp.*

435.8.6 Stairways.

435.8.6.1 *Group R-2.1 and Group R-4 occupancies housing more than six nonambulatory clients above the first floor shall be provided with two vertical exit enclosures. Stairway enclosures shall be in compliance with Section 1023. Exceptions to Section 1023 shall not apply in facilities licensed as a 24-hour care facility.*

435.8.6.2 *Group R-3.1 occupancies may continue to use existing stairways (except for winding and spiral stairways which are not permitted as a required means of egress) provided the stairs have a maximum rise of 8 inches (203 mm) with a minimum run of 9 inches (229 mm). The minimum stairway width may be 30 inches (762 mm).*

435.8.7 Floor separation. *Group R-3.1 occupancies with non-ambulatory clients housed above the first floor shall be provided with a non-fire resistance constructed floor separation at stairs which will prevent smoke migration between floors. Such floor separation shall have equivalent construction of 0.5 inch (12.7 mm) gypsum wallboard on one side of wall framing.*

Exceptions:

1. *Occupancies with at least one exterior exit from floors occupied by clients.*
2. *Occupancies provided with automatic fire sprinkler systems complying with Chapter 9.*

435.8.7.1 Doors within floor separations. *Doors within such floor separations shall be tight fitting solid wood at least $1\frac{3}{8}$ inches (35 mm) in thickness. Door glazing shall not exceed 1296 square inches (32 918 mm2) with no dimension greater than 54 inches (1372 mm). Such doors shall be positive latching, smoke gasketed and shall be automatic-closing by smoke detection.*

435.8.8 Fences and gates. *Grounds of a Residential Care Facility for the Elderly serving Alzheimer clients may be fenced and gates therein equipped with locks, provided safe dispersal areas are located not less than 50 feet (15 240 mm) from the buildings. Dispersal areas shall be sized to provide an area of not less than 3 square feet (0.28 m2) per occupant. Gates shall not be installed across corridors or passageways leading to such dispersal areas unless they comply with egress requirements.*

435.8.9 Basement exits. *One exit is required to grade level when the basement is accessible to clients.*

435.8.10 Delayed egress locks. *See Section 1010.2.13.*

435.9 Request for alternate means of protection for facilities housing bedridden clients. *Request for alternate means of protection shall apply to Sections 435 through 435.9. Request for approval to use an alternative material, assembly or materials, equipment, method of construction, method of installation of equipment or means of protection shall be made in writing to the local fire authority having jurisdiction by the facility, client or the client's authorized representative. Sufficient evidence shall be submitted to substantiate the need for an alternate means of protection.*

The facility, client or the client's representative or the local fire authority having jurisdiction may request a written opinion from the State Fire Marshal concerning the interpretation of the regulations promulgated by the State Fire Marshal for a particular factual dispute. The State Fire Marshal shall issue the written opinion within 45 days following the request. Approval of a request for use of an alternative material, assembly or materials, equipment, method of construction, method of installation of equipment or means of protection made pursuant to this section shall be limited to Group R-3.1 occupancies housing a bedridden client. Approvals made by the local fire authority having jurisdiction and the written opinion by the State Fire Marshal shall be applicable only to the requesting facility and shall not be construed as establishing any precedent for any future request by that facility or any other facility.

435.10 Temporarily bedridden clients. *Clients who become temporarily bedridden as defined in Health and Safety Code Section 1569.72, as enforced by the Department of Social Services, may continue to be housed on any story in Group R-2.1, R-3.1 or R-4 occupancies classified as Residential Care Facilities for the Elderly (RCFE). Every Residential Care Facility for the Elderly (RCFE) admitting or retaining a bedridden resident shall, within 48 hours of the resident's admission or retention in the facility, notify the local fire authority with jurisdiction of the estimated length of time the resident will retain his or her bedridden status in the facility.*

435.11 Group R-2.1, R-3.1, R-4. [SFM] *Buildings housing protective social care need not be of 1-hour fire-resistive construction when not more than two stories in height. In no case shall individual floor areas exceed 3,000 square feet (279 m^2). The fire-resistive protection of the exterior walls shall not be less than 1 hour where such walls are located within 5 feet (1524 mm) of the property line. Openings within such walls are not permitted. Openings in exterior nonrated walls need not be protected.*

SECTION 436—GROUP I-4 [SFM]

436.1 Group I-4 special provisions. *Rooms classified as Group I-4 shall not be located above or below the first story.*

Exceptions:

1. *Basements or stories having floor levels located within 4 feet (1219 mm), measured vertically, from adjacent ground level at the level of exit discharge, provided the basement or story has exterior exit doors at that level.*
2. *Group I-4 child-care center or adult day care may be located above the first story in buildings of Types II-A, III-A, IV-A, IV-B and IV-C construction, subject to the limitation of Section 503 when:*
   - *2.1. Group I-4 child-care centers with children under the age of seven or containing more than 12 children per story shall not be located above the fourth floor; and*
   - *2.2. The entire story in which the Group I-4 child-care center or adult day care is located is equipped with an approved manual fire alarm and automatic smoke-detection system. (See the California Fire Code.) Actuation of an initiating device shall sound an audible alarm throughout the entire story. When a building fire alarm system is required by other provisions of this code or the Fire Code, the alarm system shall be connected to the building alarm system. An approved alarm signal shall sound at an approved location in the Group I-4 facility to indicate a fire alarm or sprinkler flow condition in other portions of the building; and*
   - *2.3. Group I-4 child-care center or adult day care, if more than 1,000 square feet (92.9 m^2) in area, is divided into at least two compartments of approximately the same size by a smoke barrier with door openings protected by smoke- and draft-control assemblies having a fire-protection rating of not less than 20 minutes. Smoke barriers shall have a fire-resistive rating of not less than one hour. In addition to the requirements of Section 508.3.3, occupancy separations between Group I-4 child-care center or adult day care and other occupancies shall be constructed as smoke barriers. Door openings in the smoke barrier shall be tightfitting, with gaskets installed as required by Section 710, and shall be automatic closing by actuation of the automatic sprinklers, fire alarm or smoke-detection system.*
   - *2.4. Each compartment formed by the smoke barrier has not less than two exits or exit access doors, one of which is permitted to pass through the adjoining compartment; and*
   - *2.5. Where two or more exits or exit access are required at least one shall not share a common path of travel. The egress system shall comply with the requirements of Section 709 for smoke barriers.*
   - *2.6. The building is equipped with an automatic sprinkler system throughout.*

436.1.1 Egress. *Rooms used for Group I-4 child care or adult day care on the first floor shall have one exit door directly to the exterior.*

Exception: *One-hour rated corridors with a minimum width of 60 inches.*

SECTION 437—RESERVED

SECTION 438—RESERVED

SECTION 439—ROAD TUNNELS, BRIDGES AND OTHER LIMITED-ACCESS HIGHWAYS [SFM]

439.1 General. *Road tunnels, bridges and other limited-access highways that are state owned shall comply with NFPA 502.*

SECTION 440—HORSE RACING STABLES [SFM]

440.1 *For automatic sprinkler and fire alarm system requirements applying to each building, barn or structure which is used by an association regulated by the California Horse Racing Board for the stabling of horses or human habitation, and the stable area grounds, including any additional location where any excess horses are stabled see Title 4, Division 4, Article 17, Section 1927.*

SECTION 441—PET KENNELS AND PET BOARDING FACILITIES [SFM]

441.1 *These regulations shall apply to every building or fire area in which a pet boarding facility operates, as defined in Health and Safety Code Section 122380, or a pet dealer, as defined in Health and Safety Code Section 122125, maintains a kennel.*

441.2 Automatic sprinkler system. *An approved automatic sprinkler system complying with California Fire Code Section 903 shall be installed.*

Exception: *Where a fire alarm system that is connected to a central reporting station that alerts the local fire department in case of fire.*

SECTION 442—COMBUSTION ENGINES AND GAS TURBINES [SFM]

442.1 General. *The installation of combustion engines and gas turbines shall be in accordance with NFPA-37 and this chapter.*

442.2 Separation.

442.2.1 Construction. *Every room in which is installed a combustion engine or gas turbine shall be separated from the remainder of the building by not less than a one-hour fire barrier.*

442.2.2 Exterior openings. *When doors, windows or louvered openings are located below openings in another story or less than 10 feet (3048 mm) from doors, windows or louvered openings of the same building, they shall be protected by a fire assembly having a $^{3}/_{4}$-hour rating. Such fire assemblies shall be fixed, automatic or self-closing.*

442.2.2.1 Interior openings. *In other than buildings housing Group I and R-2.1 occupancies, interior openings shall be allowed in buildings protected by an automatic fire sprinkler system throughout.*

442.2.3 Location. *Combustion engines and gas turbines used for emergency power shall not be located in a room or area used for any other purpose other than equipment and controls related to the generation and distribution of emergency power.*

442.2.4 Special hazards. *The handling and use of flammable or combustible liquids shall comply with the California Fire Code.*

SECTION 443—FIXED GUIDEWAY TRANSIT AND PASSENGER RAIL SYSTEMS [SFM]

443.1 General.

443.1.1 Scope. *The provisions of this section and NFPA 130 shall apply to buildings or structures defined as stations for fixed guideway transit and passenger rail systems and shall supersede other similar requirements in other sections of this code.*

Note: *See Chapter 35 for California Amendments to NFPA 130.*

443.2 Special provisions.

443.2.1 Automatic sprinkler system. *See Section 903.2.17.1.*

443.2.2 Station guideway deluge system. *See Section 903.2.17.2.*

443.2.3 Standpipe systems. *See Section 905.3.11.*

443.2.4 Fire alarm and communication systems. *See Section 907.2.26.*

443.2.5 Emergency ventilation control. *Emergency ventilation systems shall comply with this section and NFPA 130.*

443.2.5.1 *Emergency ventilation systems shall be supervised and/or controlled in all operating modes locally (motor control center and/or fan unit) and remotely at both the Operations Control Center and the station Fire Command Center.*

443.2.5.2 *Fan running shall be provided by sensing devices for each fan for operation in both the supply and exhaust directions.*

443.2.5.3 *Trouble status signals shall be annunciated in the local control room. A summarized trouble signal shall be annunciated at Operations Control Center and Fire Command Center.*

SECTION 444—EXPLOSIVES [SFM]

[Section 444 has been repealed and replaced by the adoption of California Fire Code Chapter 56.]

SECTION 445—RESERVED

SECTION 446—WINERY CAVES [SFM]

446.1 Scope. *The use of subterranean space for winery facilities in natural or manmade caves shall be in accordance with this section.*

446.2 Definitions.

446.3 General. *For definitions of ASSEMBLY, FIRE APPLIANCE and NONCOMBUSTIBLE, see Chapter 2.*

446.4 Limited application. *For the purpose of Section 446, certain terms are defined as follows:*

TYPE 1 WINERY CAVES *are natural or manmade caves used solely for storage and/or processing of wine at a winery facility. Type 1 winery caves are not accessible to the public.*

TYPE 2 WINERY CAVES *are natural or manmade caves used for the storage and/or processing of wine at a winery facility. Type 2 winery caves are accessible to the public on guided tours only.*

TYPE 3 WINERY CAVES *are natural or manmade caves used for the storage and/or processing of wine at a winery facility. Type 3 winery caves are accessible to the public on guided tours and contain assembly use areas.*

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446.5 Permits. *For permits to operate Type 2 and 3 winery caves, see Section 105.*

446.6 Fire apparatus access roads. *Fire apparatus access roads shall be constructed and maintained in accordance with the California Fire Code, Section 503.*

446.7 Construction requirements.

446.7.1 Allowable area. *The area of winery caves shall not be limited if constructed entirely of noncombustible materials. Winery caves constructed with combustible materials shall be limited in area so that no point is more than 150 feet (45 720 mm) from an exit.*

446.7.2 Interior construction. *The walls and ceilings of winery caves shall not contain hidden or concealed spaces.*

446.8 General requirements.

446.8.1 Public tours. *Tours for the public shall be continuously guided by staff knowledgeable in the location of exits and the use of emergency notification devices.*

446.8.2 Standby personnel. *Per the California Fire Code, Section 2404.20, when, in the opinion of the fire chief, it is essential for public safety, the owner, agent or lessee shall employ one or more qualified persons, as required and approved by the chief, to be on duty at such place. Such individuals shall be in uniform or otherwise easily identifiable.*

Standby personnel shall be subject to the fire chief's orders at all times when so employed and shall remain on duty during the times such places are open to the public or when such activity is being conducted.

Before the start of any activity requiring standby personnel, such individuals shall:

1. *Inspect the required fire appliances to ensure they are in the proper place and in good working order.*
2. *Inspect all exits to verify accessibility and proper operation.*

While on duty, such individuals shall not be required or permitted to perform any duties other than those specified by the fire chief.

446.8.3 Open-flame devices. *The use of candles and other open-flame devices shall be in accordance with California Fire Code Section 308.1.7.*

446.9 Portable fire extinguishers and other fire appliances. *Portable fire extinguishers shall be located to be readily accessible. Its type, location and spacing throughout the facility shall be in accordance with the provisions of Title 19, Chapter 3 and California Fire Code Section 906.1. Other fire appliances shall be maintained at the site as required by the fire chief.*

446.10 Fire alarm systems. *An approved manual fire alarm system conforming with the provisions of the California Fire Code, Section 907.2.1 shall be provided in all Type 3 winery caves.*

446.11 Exits.

446.11.1 Distribution. *Exits shall be located remotely from each other and arranged to minimize any possibility that more than one may be blocked off by any one fire or other emergency condition.*

446.11.2 Number. *Winery caves shall be provided with a minimum of two exits.*

Assembly areas of Type 3 winery caves shall be provided with exits as required by the California Building Code for Group A Occupancies.

446.12 Exit illumination.

446.12.1 General. *Exits shall be illuminated to a minimum intensity of not less than 1 foot-candle (10.76 lx) at floor level whenever the winery cave is occupied. Fixtures providing exit illumination shall be supplied from a dedicated circuit or source of power used only for exit illumination.*

446.12.2 Separate sources of power. *The power supply for exit illumination may be provided by the premises' wiring system. In the event of its failure, illumination shall be automatically provided from an emergency system in Types 2 and 3 winery caves. Emergency systems shall be supplied from storage batteries or an on-site generator set, and the system shall be installed in accordance with the requirements of the California Electrical Code.*

446.13 Exit signs. *Exit signs shall be installed at required exits and where otherwise necessary to clearly indicate the exits from assembly areas in Type 3 winery caves.*

446.14 Maximum occupant load. *Occupant load requirements in the assembly areas of Type 3 winery caves shall be in accordance with Section 1004.*

446.15 Seating arrangements. *Seating arrangements in the assembly areas of Type 3 winery caves shall be in accordance with California Fire Code, Section 1028.9.*

SECTION 447—RESERVED

SECTION 448—RESERVED

SECTION 449—PUBLIC LIBRARIES [SL AND SFM]

Public libraries funded from the California Library Construction and Renovation Act of 1988.

449.1 Automatic sprinkler system. *Automatic sprinkler systems shall be installed in:*

1. *New facilities, including additions;*

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2. *Existing facilities to which a project adds the lesser of 5,000 square feet (465 m^2) or 10 percent of the size of the existing facility, if the existing facility does not already have an automatic sprinkler system.*

449.2 System monitoring requirement. *All fire protection systems shall be monitored by a fire alarm supervising station in accordance with the NFPA 72.*

449.3 Book return slots. *Any interior book return with a slot piercing the exterior wall shall have a separate sprinkler head and be enclosed in fire-rated construction.*

449.4 Automatic sprinkler and extinguishing systems. *For public libraries constructed with funds awarded under the California Reading and Literacy Improvement and Public Library Construction and Renovation Bond Act of 2000:*

1. ***Fire sprinkler system requirement.*** *All libraries funded for new construction, including additions, shall have automatic fire sprinkler systems installed.*
2. ***Fire sprinkler system requirement for renovations of existing facilities.*** *If there is no automatic fire sprinkler system in the existing facility, grant recipients shall be required to install a fire sprinkler system throughout the existing facility.*
3. ***Fire sprinkler system types.*** *The grant recipient may choose, on approval by the local fire authority, from wet-pipe, dry-pipe or pre-action systems, utilizing listed standard, early suppression fast response (ESFR), or on/off type sprinkler heads.*
4. ***Book return rooms and slots.*** *Book return rooms with slots in exterior walls shall have an automatic sprinkler head and be of approved fire-resistive construction. Book return slots and book drops shall have an additional automatic sprinkler head when shielded from the room sprinkler head.*
5. ***System monitoring requirement.*** *All fire protection systems shall be monitored by a fire alarm supervising station in accordance with the National Fire Protection Association (NFPA) 72.*
6. ***Alternate fire-extinguishing systems for specialized areas.*** *When approved by the fire authority having jurisdiction, other types of approved automatic fire-extinguishing systems may be utilized as an alternate to sprinklers in the following areas: rare book rooms, central computer rooms and telecommunication rooms.*
7. ***Automatic sprinkler system plan requirement.*** *Fire sprinkler system drawings shall use the furniture plan as a background for coordination with furniture and book stack location and height.*

SECTION 450—GROUP C [SFM]

450.1 Group C Occupancies defined.

450.1.1 Organized camps. *For the purposes of these regulations, Group C Occupancies shall mean "organized camps" as defined in Section 18897, Health and Safety Code.*

450.1.1.1 Description. *An organized camp is a site with programs and facilities established for the primary purpose of providing an outdoor group living experience with social, spiritual, educational or recreational objectives, for five days or more during one or more seasons of the year.*

The term "organized camp" does not include a motel, tourist camp, trailer park, resort, hunting camp, auto court, labor camp, penal or correctional camp, child-care institution or home-finding agency nor does it include any charitable or recreational organization which complies with the rules and regulations for recreational trailer parks provided for by Section 18301 (b), Health and Safety Code.

450.1.2 Tents and tent structures. *For the purpose of this chapter, a tent or tent structure is defined as any shelter of which 25 percent or more of the walls or roof, or both, are constructed of, or covered or protected by, a canvas or any other fabric material.*

450.2 Purpose and intent. *The provisions of this section are established to provide fire and life safety in organized camps, but at the same time preserve the basic concept of outdoor living. It is the intent of this section that organized camps shall be considered as a separate and distinct occupancy.*

450.3 Basic building and structures.

450.3.1 Building classification. *Every building or structure shall be classified into the occupancy group they most nearly resemble and be constructed in accordance with appropriate occupancy requirements specified in this part.*

Exceptions:

1. *Tents, tent structures, and buildings and structures that do not exceed 25 feet (7620 mm) in any lateral dimension and where such building or structure is not more than one story.*
2. *For fire safety, buildings or structures on the premises of an organized camp which are used for sleeping purposes, regardless of their similarity to other occupancy groups, shall conform to the provisions of Sections 450.4, 450.5, 450.6 and 450.7.*
3. *For fire safety, buildings and structures which are not used for sleeping purposes shall conform to the provisions of Section 450.7, which shall supersede any similar provisions contained in this part.*

450.3.2 Occupant load. *The living shelter whether a building, structure, tent and tent structure, or cabin, shall provide a minimum of 30 square feet (2.8 m^2) of superficial floor area per person for single-tier bed units, and 20 square feet (1.9 m^2) of superficial floor area per person for two-tier bed units. More than two tiers per bed unit are prohibited. There shall be at least 3 feet (914 mm) of lateral distance between beds.*

Exception: *Intermittent short-term organized camps are not required to provide shelter facilities but, if provided, they shall comply with this section.*

450.4 General.

450.4.1 Buildings intended for sleeping. *Buildings and structures used or intended for sleeping purposes which do not exceed any one of the limitations set forth below shall conform to the provisions of Sections 450.5 and 450.7.*

1. *One story in height*
2. *Twenty-five feet (7620 mm) in any lateral dimension*

   Exception: *This provision shall not apply to buildings or structures conforming to construction provisions of this section in effect prior to January 1, 1985.*
3. *Maximum housing of 12 persons*

450.4.2 Limitations. *Buildings and structures used or intended for sleeping purposes, including those so used in whole or in part by staff personnel, and which exceed any one of the limitations set forth in Section 450.4.1, shall conform to the provisions of Sections 450.5 and 450.7.*

Exception: *Buildings or structures used exclusively for living and sleeping purposes by resident custodial or caretaker personnel only may be constructed in accordance with the provisions of these regulations for a Group R, 3 Occupancy.*

450.5 Special buildings, tents and tent structures.

450.5.1 Special buildings. *In addition to the provisions of Section 450.7, special buildings conforming to the limitations specified in Section 450.4.1 shall conform to the following:*

1. *The flame-spread end-point rating of all interior finish materials shall not exceed 200.*
2. *Every room or area housing more than eight persons shall be provided with not less than two approved exits, each of which shall be direct to the exterior and shall not be less than 32 inches (813 mm) in clear width and 6 feet 8 inches (2032 mm) in height. Rooms or areas housing eight or less persons shall be provided with at least one such exit direct to the exterior.*
3. *Every exit door shall be openable from the inside without the use of any key, special knowledge or effort.*
4. *Exit doors need not be hung to swing in the direction of exit travel. Where exit doors are hung to swing in the direction of exit travel, a landing conforming to the provisions of Section 1010.1.5 shall be provided.*
5. *When the distance (measured vertically) between the ground level and the floor level exceeds 8 inches (203 mm), a stairway from each exit shall be provided. Steps shall have a rise of not more than 8 inches (203 mm) and a run of not less than 9 inches (229 mm). Such stairway shall be at least as wide as the door it serves.*

   Exception: *In lieu of a stairway, a ramp having a slope of not more than 1 foot (305 mm) of rise for each 8 feet (2438 mm) of run may be provided.*
6. *When the floor level at any door opening of any building or structure is more than 30 inches (762 mm) above the adjacent ground level, handrails or guardrails shall be provided on the landing, balcony or porch, and on every stairway or ramp to ground level.*
7. *Buildings and structures or groups of buildings and structures shall be separated from each other by not less than 10 feet (3048 mm).*

   Exception: *This section shall not apply to existing buildings and structures of Group C Occupancies.*

450.5.2 Tents and tent structures. *In addition to the provisions of Section 450.7, tents and tent structures, or groups thereof, shall conform to the provisions of Section 450.5, except as follows:*

1. *Regardless of any other provisions of this section, heating of tents and tent structures shall be prohibited unless written permission is obtained from the fire chief.*
2. *All canvas or other fabric material shall be treated and maintained in a flame-retardant condition.*

   Exceptions:

   1. *Tents in existence prior to January 1, 1979, provided the following conditions are met:*
      - *1.1. Tents shall not exceed 80 square feet (7.4 m^2) in area.*
      - *1.2. No electrical devices, except flashlights, are installed or used in the tents.*
      - *1.3. Tents are not located closer than 30 feet (9144 mm) to any open fire.*
      - *1.4. Smoking is prohibited in the tents.*
      - *1.5. All other applicable provisions of this article are met.*
   2. *Canvas or materials used exclusively to protect windows and similar openings in walls.*
   3. *Canvas or materials used as a windbreak enclosure of not more than three sides and open to the sky.*

   Note: *It is not the intent of Section 450.5.2 that strict adherence to the width and height requirements of exit openings be enforced for exits from tents.*

450.6 Building and structures for sleeping. *Buildings and structures, or portions thereof, used or intended for sleeping purposes and which exceed the height, area or capacity limitations specified in Section 450.4.1 shall conform to the provisions of this section.*

450.6.1 Area, height and type of construction. *Buildings and structures, or portions thereof, shall not exceed the limits of area, height and type of construction specified in these regulations for a Group R-2.1 occupancy. Such buildings and structures shall not be of less than one-hour fire-resistive construction throughout.*

450.6.2 Location on property. *The fire-resistive protection of exterior walls and openings, as determined by location on property, shall be in accordance with the provisions of these regulations for a Group R-2.1 occupancy.*

450.6.3 Exits. *Stairs, exits and smoke-proof enclosures shall be provided in accordance with the provisions of Chapter 10.*

450.6.4 Enclosure of vertical openings. *Exits shall be enclosed as specified in Chapter 10. Elevator shafts, vent shafts and other vertical openings shall be enclosed and enclosures shall be as set forth in Chapter 7.*

450.6.5 Fire-extinguishing systems. *Automatic fire-extinguishing systems, standpipes and basement pipe inlets shall be installed when and as specified in Chapter 9 for buildings, based on the occupancy they most nearly resemble.*

450.6.6 Automatic fire alarm system. *See Section 907.*

450.7 Special requirements. *The provisions of this section shall apply to the premises and to all buildings and structures of all organized camps.*

450.7.1 Electrical. *The installation of all electrical wiring shall conform to the applicable provisions of the California Electrical Code.*

450.7.2 Heating equipment. *Heating equipment, and the installation thereof, shall conform to the provisions of the California Mechanical Code.*

450.7.3 Motion picture booths. *Motion picture machine booths shall conform to the requirements of Section 409.*

450.7.4 Interior finish. *Interior finish shall conform to the requirements of Chapter 8, except as permitted in Section 450.5.1, Item 1.*

450.7.5 Heater room openings. *All exterior openings in rooms containing central heating equipment, low-pressure boilers or water-heating boilers used as part of the heating system, if located below openings in another story, or if less than 10 feet (3048 mm) from other doors or windows of the same building, shall be protected by a fire assembly having a three-fourths-hour fire-resistive rating. Such fire assemblies shall be fixed, automatic or self-closing.*

Exception: *The requirement for three-fourths-hour fire assembly protection of openings may be deleted if the entire room is protected by an automatic sprinkler system conforming to the provisions of Section 903.*

450.7.6 Heating rooms. *Every room containing central-heating equipment, low-pressure boiler or water-heating boiler used as part of the heating system shall be separated from the rest of the building by a one-hour fire-resistive fire barrier with all openings protected as set forth in Section 707.6.*

Exceptions:

1. *Boilers or central heating plants where the largest piece of fuel equipment does not exceed 400,000 Btu per hour (135 kW) input.*
2. *When any such opening is protected by a pair of fire doors, the inactive leaf shall be normally secured in the closed position and shall be openable only by use of a tool. An astragal shall be provided and the active leaf shall be self-closing.*

450.7.7 Exits. *For purposes of determining occupant load for exit requirements, see Section 450.3.2.*

450.7.8 Liquefied petroleum gas. *The construction and installation of all tanks, cylinders, equipment and systems used or intended for use in conjunction with any liquefied petroleum gas shall conform to the provisions of the California Mechanical Code and the California Fire Code.*

450.7.9 Air-conditioning and ventilation systems. *Heating units used as an integral part of an air-conditioning and ventilation system shall be installed in accordance with Sections 450.7.2, 450.7.3 and 450.7.6.*

450.8 Camp fire alarm. *Every organized camp shall provide and maintain a device or devices suitable for sounding a fire alarm. Such device or devices may be of any type acceptable to the enforcing agency provided they are distinctive in tone from all other signaling devices or systems and shall be audible throughout the camp premises. When an automatic fire alarm system is provided, as required by Section 450.6.6, all signaling devices required by this section shall be of the same type as that used in the automatic system.*

SECTION 451—RESERVED

SECTION 452—*SCHOOL FACILITIES FOR KINDERGARTEN THROUGH 12TH GRADE AND GROUP E CHILD CARE*

452.1 General provisions. *School facilities for Kindergarten through 12th grade and Group E child care shall comply with the provisions of this section and other applicable provisions of this code including requirements for specific occupancies.*

452.1.1 Location on property. *All buildings housing Group E occupancies shall front directly on a public street or an exit discharge not less than 20 feet (6096 mm) in width. The exit discharge to the public street shall be a minimum 20-foot-wide (6096 mm) right-of-way, unobstructed and maintained only as access to the public street. At least one required exit shall be located on the public street or on the exit discharge.*

452.1.2 Separate means of egress systems required. *Every room with an occupant load of 300 or more shall have one of its exits or exit-access doorways lead directly into a separate means of egress system that consists of not less than two paths of exit travel which are separated by a smoke barrier in accordance with Section 709 in such a manner to provide an atmospheric separation that precludes contamination of both paths of exit travel by the same fire. Not more than two required exits or exit-access doorways shall enter into the same means of egress system.*

452.1.3 Fences and gates. *School grounds may be fenced and gates therein may be equipped with locks, provided that safe dispersal areas based on 3 square feet (0.28 m^2) per occupant are located between the school and the fence. Such required safe dispersal areas shall not be located less than 50 feet (15 240 mm) from school buildings.*

Every public and private school shall conform with Section 32020 of the Education Code which states:

The governing board of every public school district, and the governing authority of every private school, which maintains any building used for the instruction or housing of school pupils on land entirely enclosed (except for building walls) by fences of walls, shall, through cooperation with the local law enforcement and fire-protection agencies having jurisdiction of the area, make provision for the erection of gates in such fences or walls. The gates shall be of sufficient size to permit the entrance of the ambulances, police equipment and firefighting apparatus used by the law enforcement and fire-protection agencies. There shall be no less than one such access gate and there shall be as many such gates as needed to assure access to all major buildings and ground areas. If such gates are to be equipped with locks, the locking devices shall be designed to permit ready entrance by the use of the chain or bolt-cutting devices with which the local law enforcement and fire-protection agencies may be equipped.

452.1.4 Special provisions. *Rooms used by kindergarten, first- or second-grade pupils, and Group E child care, shall not be located above or below the first story.*

Exceptions:

1. *Kindergarten, first- or second-grade pupils, or Group E child care may be located in basements or stories having floor levels located within 4 feet (1219 mm), measured vertically, from the adjacent ground level at the level of exit discharge, provided the basement or story has exterior exit doors at that level.*
2. *In buildings equipped with an automatic sprinkler system throughout, rooms used for kindergarten, first- and second-grade children or for Group E child-care purposes may be located on the second story, provided there are at least two exterior exit doors, or other egress systems complying with Section 1020 with two exits, for the exclusive use of such occupants. Egress systems for the exclusive use of such occupants shall be maintained until exit discharge at grade is attained.*
3. *Group E day-care facilities may be located above the first story in buildings of Type I-A, I-B, II-A, III-A, IV-A, IV-B and IV-C construction, subject to the limitation of Section 503 when:*
   - 3.1. *Facilities with children under the age of seven or containing more than 12 children per story shall not be located above the fourth floor; and*
   - 3.2. *The entire story in which the day-care facility is located is equipped with an approved manual fire alarm and automatic smoke-detection system. Actuation of an initiating device shall sound an audible alarm throughout the entire story.*

     When a building fire alarm system is required by other provisions of this code, the alarm system shall be interconnected and sound the day-care fire alarm system; and
   - 3.3. *The day-care facility, if more than 1,000 square feet (92.9 m^2) in area, is divided into at least two compartments of approximately the same size by a smoke barrier in accordance with Section 709. In addition to the requirements of Section 508, occupancy separations between day-care and other occupancies shall be constructed as smoke barriers. Door openings in the smoke barrier shall be tight fitting, with gaskets installed as required by Section 716.5.3.1 and shall be automatic closing by actuation of the fire sprinklers, fire alarm or smoke detection system; and*
   - 3.4. *Each compartment formed by the smoke barrier has not less than two exits or exit-access doors, one of which is permitted to pass through the adjoining compartment, and*
   - 3.5. *At least one exit or exit-access door from the day-care facility shall be into a separate means of egress with not less than two paths of exit travel, which are separated in such a manner to provide an atmospheric separation. The egress system shall comply with the requirements of Section 709 for smoke barriers.*
   - 3.6. *The building is equipped with an automatic sprinkler system throughout.*

452.1.5 Special hazards. *School classrooms constructed after January 1, 1990, not equipped with automatic sprinkler systems, which have metal grilles or bars on all their windows and do not have at least two exit doors within 3 feet (914 mm) of each end of the classroom opening to the exterior of the building or to a common hallway used for evacuation purposes, shall have an inside release for the grilles or bars on at least one window farthest from the exit doors. The window or windows with the inside release shall be clearly marked as emergency exits.*

452.1.6 *Class I, II or III-A flammable liquids shall not be placed, stored or used in Group E occupancies, except in approved quantities as necessary in laboratories and classrooms and for operation and maintenance as set forth in the California Fire Code.*

SECTION 453—GROUP L [SFM]

453.1 Scope. *The provisions of this section shall apply to buildings or structures, or portions thereof, containing one or more Group L laboratory suites as defined in Section 202.*

The provisions of this section are optional and may apply to buildings or structures. See Section 304 for Group B Laboratories.

453.1.1 Technical report. *The enforcing agency may require a technical opinion and report to identify and develop methods of protection from the hazards presented by the hazardous materials. A qualified person, firm or corporation, approved by the enforcing agency, shall prepare the opinion and report, and shall be provided without charge to the enforcing agency. The opinion and report may include, but is not limited to, the preparation of a hazardous material management plan (HMMP); chemical analysis; recommendations for methods of isolation, separation, containment or protection of hazardous materials or processes, including appropriate engineering controls to be applied; the extent of changes in the hazardous behavior to be anticipated under conditions of exposure to fire or from hazard control procedures; and the limitations or conditions of use necessary to achieve and maintain control of the*

hazardous materials or operations. The report shall be entered into the files of the code enforcement agencies. Proprietary and trade secret information shall be protected under the laws of the state or jurisdiction having authority.

453.2 Definitions. *The following terms are defined in Chapter 2:*

LABORATORY SUITE.

[F] LIQUID TIGHT FLOOR.

453.3 Laboratory suite requirements.

453.3.1 *The gross floor area of an individual laboratory suite shall not exceed 10,000 square feet (929 m^2).*

453.3.2 *An individual laboratory suite shall not serve more than a single tenant.*

Exception: *An individual laboratory suite shall have a responsible party or department for all hazardous materials within a suite.*

453.4 Construction.

453.4.1 Separation of laboratory suites.

453.4.1.1 *Laboratory suites shall be separated from other occupancies in accordance with Table 508.4.*

453.4.1.2 *Laboratory suites shall be separated from other laboratory suites by a fire barrier having a fire-resistance rating of not less than 1-hour.*

453.4.1.3 *Laboratory suites shall be separated from control areas by a minimum 2-hour fire-resistance rating in accordance with Sections 707 and 711.*

Exception: *Laboratory suites shall be separated from control areas by a minimum 1-hour fire-resistance rating on floor levels below the 4th story.*

453.4.1.4 Horizontal separation. *The floor construction of the laboratory suite and the construction supporting the floor of the laboratory suite shall have a minimum 2-hour fire-resistance rating in accordance with Section 711.*

Exceptions:

1. *The floor construction of the laboratory suite and the construction supporting the floor of the laboratory suite are allowed to be 1-hour fire-resistance rated in buildings of Type IIA, IIIA and VA construction.*
2. *When an individual laboratory suite occupies more than one story, the intermediate floors contained within the suite shall comply with the requirements of Table 601.*

453.4.2 Reserved.

453.4.3 Fire barrier and fire-smoke barrier.

453.4.3.1 Fire barrier. *A fire barrier having a fire resistance rating of not less than 2-hours shall divide any story containing more than one laboratory suite on the 4th story and above.*

453.4.3.1.1 *Fire barriers shall be continuous from exterior wall to exterior wall,*

453.4.3.1.2 *The fire barrier shall divide the floor so that the square footage on each side of the 2-hour fire barrier is not less than 30 percent of the total floor area, and*

453.4.3.1.3 *The number of laboratory suites on each side of the 2-hour fire barrier shall not be less than 25 percent of the total number of laboratory suites on the floor.*

453.4.3.2 Fire-smoke barrier. *Any story containing a Group L occupancy on the 11th story and above shall be subdivided by a fire-smoke barrier constructed as a fire barrier having a fire-resistance rating of not less than 2 hours and shall also comply with the smoke barrier requirements of Section 709.*

The 2-hour fire-smoke barrier shall be in accordance with Sections 453.4.3 through 453.4.3.2.3.

453.4.3.2.1 *A minimum of one door opening shall be provided in the 2-hour fire-smoke barrier for emergency access.*

453.4.3.2.2 *Each side of the 2-hour fire-smoke barrier shall be designed as a separate smoke zone designed in accordance with Section 909.6.*

453.4.3.2.3 T*he area on each side of the 2-hour fire- smoke barrier shall be served by a minimum of one exit enclosure in accordance with Section 1022.*

453.4.4 Emergency response equipment area. *When required by the fire code official, an area for emergency response equipment shall be provided on each floor in an approved location. The area shall be a minimum of 50 square feet (4.6 m^2), for spill mitigation supplies per California Fire Code 5001.3.3.4 in a location approved by the fire code official, and identified with signage.*

Exception: *The area size for spill mitigation supplies may be reduced by the fire code official when adequate supplies are provided.*

453.4.5 Liquid tight floor. *All portions of the laboratory suite where hazardous materials may be stored, dispensed, handled or used shall be provided with a liquid tight floor. The intersections of such floors shall have an integral coved base that extends upward onto the wall not less than 2 inches. Where the floor is designed to provide spill control or secondary containment the floor shall be designed in accordance with California Fire Code Section 5004.2.*

453.4.6 Secondary power systems. *A legally required standby power system shall have an automatic transfer time of not more than 10 seconds.*

453.4.6.1 Required systems. *Standby power shall be provided for all electrically operated equipment, systems and connected control circuits including:*

1. *Mechanical ventilation systems. See Section 453.4.7.2.*
2. *Temperature control systems required to prevent unsafe process excursions or chemical reactions.*
3. *Treatment systems and scrubbers.*
4. *Emergency Responder Radio Coverage (ERRCS). See Section 510 of the California Fire Code.*
5. *Electrically operated systems required elsewhere in this code and the California Fire Code.*

453.4.7 Ventilation.

453.4.7.1 Compatibility. *Incompatible materials shall not be conveyed in the same duct system. Combined products in mechanical exhaust ducts shall not create a physical hazard or reaction that could degrade the duct material. The building official may require a technical report in accordance with Section 453.7.1.*

453.4.7.2 Fire dampers, smoke dampers and combination fire/smoke dampers. *Fire dampers, smoke dampers or fire/smoke dampers shall not be permitted in mechanical exhaust duct systems used to maintain a safe laboratory environment. When the exhaust duct penetrates the laboratory suite boundary the exhaust duct shall be located within a horizontal or vertical assembly having a fire resistance rating equal to the fire barrier.*

453.4.7.3 Reserved.

453.4.7.4 Laboratory suite exhaust air.

453.4.7.4.1 *Exhaust air from laboratory suites shall not be recirculated.*

453.4.7.4.2 *Laboratory suite exhaust air shall be independently ducted to a point outside the building or an approved roof top structure.*

Exception: *Exhaust ducts serving separate laboratory suites may be connected to a common duct within a fire rated vertical shaft when the sub-duct extends vertically upward at least 22 inches.*

453.4.7.4.3 *Laboratory suite exhaust ducts shall not penetrate the fire barriers required by Section 453.4.1.*

Exception: *Where the exhaust duct is enclosed in a rated shaft in accordance with Section 713.*

453.4.7.5 Ventilation rates. *Mechanical exhaust ventilation systems shall provide a minimum ventilation rate not less than 1 cubic feet per minute per square foot [0.00508 $m^3/(s \cdot m^2)$] of floor area, or 6 air exchanges per hour, whichever is greater. Systems shall operate continuously at the designed ventilation rate.*

Exception: *Refer to California Fire Code Section 5001.3 Performance-based design alternatives, as approved by the Fire Code Official.*

453.4.7.6 Reserved.

453.4.7.7 Mechanical ventilation system balancing. *Mechanical ventilation systems shall be designed and balanced such that during normal and emergency conditions the door opening forces comply with the requirements of Sections 1010.1.3 and Chapter 11B as applicable. Emergency conditions shall include: supply fan shutdown or failure, closing of smoke dampers or combination fire/smoke dampers, or emergency power.*

453.5 Fire protection systems. See Chapter 9.

453.6 Means of egress.

453.6.1 Access to exits. *Every room of a laboratory suite containing hazardous materials and having a floor area of 500 square feet (19 m^2) or more shall have access to not less than two separate exits or exit-access doorways in accordance with Section 1006.2.*

453.6.2 Door swing. *All exit and exit-access doors serving areas with hazardous materials shall swing in the direction of exit travel, regardless of the occupant load served.*

453.6.3 Panic hardware. *Exit and exit access doors from areas with hazardous materials shall not be provided with a latch or lock unless it is panic hardware or fire exit hardware.*

453.6.4 Buildings of four stories or more. *A minimum of one exit shall be provided to serve the floor on each side of the 2-hour fire barrier and shall comply with the provisions of Chapter 10.*

453.6.5 Reserved.

453.7 Hazardous materials.

453.7.1 Multiple hazards. *When a hazardous material has multiple hazards, all hazards shall be addressed and controlled in accordance with the provisions of this code and the California Fire Code.*

453.7.2 Percentage of maximum allowable quantities. *The percentage of the maximum allowable quantity of hazardous materials per laboratory suite permitted for each story level within a building shall be in accordance with Table 453.7.2.1.*

TABLE 453.7.2.1—HAZARDOUS MATERIALS QUANTITY PER LABORATORY SUITE

STORY		PERCENTAGE OF MAXIMUM ALLOWABLE QUANTITY PER LABORATORY SUITE[a, b]	NUMBER OF LAB SUITES PER FLOOR BASED ON CONSTRUCTION TYPE				
			Type IA	Type IB	Type IIA, IIIA, IV	Type IIB, IIIB, VA	Type VB
Above grade plane	Above 20	0	NP	NP	NP	NP	NP
	15 to 20	25	4	NP	NP	NP	NP
	11, 12, 13, 14	50	8	NP	NP	NP	NP
	7, 8, 9, 10	50	16	NP	NP	NP	NP
	6	75	20	20	NP	NP	NP
	4, 5	75	20	20	20	NP	NP
	3	100	UL	UL	UL	UL	NP
	1, 2	100	UL	UL	UL	UL	UL
Below grade plane	1	75[c]	10	10	10	10	10
	2	50[d]	5	5	5	5	5
	3 and below	0	NP	NP	NP	NP	NP

UL = Unlimited, NP = Not permitted

a. Percentages shall be of the maximum allowable quantity per laboratory suite shown in Tables 307.1(1) and 307.1(2). Allowable hazardous material increases for buildings equipped throughout with an automatic sprinkler system shall not be applicable to Group L occupancies.

b. When an individual laboratory suite occupies more than one story, the more restrictive percentage of the maximum allowable quantity per laboratory suite shall apply.

c. The total aggregate quantity of flammable liquids on the first story below grade shall be limited to the maximum total aggregate quantity for Group B occupancy control areas.

d. The total aggregate quantity of flammable liquids on the second story level below grade shall be limited to a maximum total aggregate quantity for Group B occupancy control areas.

453.7.3 Handling and transportation. *The handling and transportation of hazardous materials shall be in accordance with Section 5003.10 of the California Fire Code.*

453.8 Elevators and elevator lobbies on the 11th story and above. *Any story containing a Group L occupancy on the 11th story and above shall be provided with elevators and elevator lobbies in accordance with Sections 453.8.1 through 453.8.3.*

453.8.1. *An elevator that serves every story of the building shall be provided on each side of the 2-hour fire-smoke barrier.*

453.8.2. *An elevator lobby shall be provided on each side of the 2-hour fire-smoke barrier at each floor in accordance with Section 3006.*

453.8.3. *The elevator and its associated elevator lobbies and elevator machine rooms shall be pressurized in accordance with Section 909.6.*

453.9 Existing Group L and Group H-8 occupancies, additions, alterations or repairs. *See California Fire Code Chapter 11, Section 1116 and California Existing Building Code.*

SECTION 454—RESERVED

SECTION 455—LARGE FAMILY DAY-CARE HOMES [SFM]

455.1 Large family day-care homes.

455.2. *For purposes of clarification, Health and Safety Code Sections 1597.45 and 1597.46 are repeated.*

1597.45.

(a) The use of a home as a small or large family day-care home shall be considered a residential use of property and a use by right for the purposes of all local ordinances, including, but not limited to, zoning ordinances.

(b) A local jurisdiction shall not impose a business license, fee or tax for the privilege of operating a small or large family day-care home.

(c) Use of a home as a small or large family day-care home shall not constitute a change of occupancy for purposes of Part 1.5 (commencing with Section 17910) of Division 13 (State Housing Law) or for purposes of local building codes.

(d) A small or large family day-care home shall not be subject to the provisions of Division 13 (commencing with Section 21000) of the Public Resources Code.

(e) The provisions of this chapter do not preclude a city, county or other local public entity from placing restrictions on building heights, setback or lot dimensions of a family day-care home, as long as those restrictions are identical to those applied to all other residences with the same zoning designation as the family day-care home. This chapter does not preclude a local ordinance that deals with health and safety, building standards, environmental impact standards or any other matter within the

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jurisdiction of a local public entity, as long as the local ordinance is identical to those applied to all other residences with the same zoning designation as the family day-care home. This chapter also does not prohibit or restrict the abatement of nuisances by a city, county, or city and county. However, the ordinance or nuisance abatement shall not distinguish family day-care homes from other homes with the same zoning designation, except as otherwise provided in this chapter.

(f) For purposes of this chapter, "small family day-care home or large family day-care home" includes a detached single-family dwelling, a townhouse, a dwelling unit within a dwelling or a dwelling unit within a covered multifamily dwelling in which the underlying zoning allows for residential uses. A small family day-care home or large family day-care home is where the family day-care provider resides and includes a dwelling or dwelling unit that is rented, leased or owned.

(Amended by Stats. 2019, Ch. 244, Sec. 9. (SB 234) Effective January 1, 2020.)

1597.46.

(a) A large family day-care home shall abide by all standards, in addition to the requirements of the State Uniform Building Standards Code, that are specifically designed to promote fire and life safety in large family day-care homes. The State Fire Marshal shall adopt separate building standards specifically relating to the subject of fire and life safety in family day-care homes, which shall be published in Title 24 of the California Code of Regulations. These standards shall apply uniformly throughout the state and shall include, but not be limited to, all of the following:

(1) The requirement that a large family day-care home contain a fire extinguisher or smoke detector device, or both, that meets child-care standards established by the State Fire Marshal.

(2) Specification as to the number of required exits from the home.

(3) Specification as to the floor or floors on which child care may be provided and the number of required exits on each floor.

(b) A large family day-care home for children shall have one or more carbon monoxide detectors in the facility that meet the standards established in Chapter 8 (commencing with Section 13260) of Part 2 of Division 12. The department shall account for the presence of these detectors during inspections.

(c) Enforcement of this section shall be in accordance with Sections 13145 and 13146. A city, county, city and county, or district shall not adopt or enforce a building ordinance or local rule or regulation relating to the subject of fire and life safety in large family day-care homes that is inconsistent with those standards adopted by the State Fire Marshal, except to the extent the building ordinance or local rule or regulation applies to all residences with the same zoning designation in which child care is provided.

(Repealed and added by Stats. 2019, Ch. 244, Sec. 12. (SB 234) Effective January 1, 2020.)

455.3 Smoke alarms. *Large family day-care homes shall be equipped with State Fire Marshal approved and listed single station residential type smoke alarms. The number and placement of smoke alarms shall be determined by the enforcement authority.*

455.4 Fire extinguishers. *Large and small family day-care homes shall be equipped with a portable fire extinguisher having a minimum 2A10BC rating.*

455.5 Fire alarm devices. *See Section 907.2.6.4.*

455.6 Compliance. *Every large-family day-care home shall comply with the provisions for Group R-3 occupancies. For the purposes of Section 436.1, the first story shall be designated as the floor used for residential occupancy nearest to the street level which provides primary access to the building.*

455.7 Special hazards. *Every unenclosed gas-fired water heater or furnace which is within the area used for child care in a large family day-care home shall be protected in such a way as to prevent children from making contact with those appliances.*

Exception: *This does not apply to kitchen stoves or ovens.*

455.8 Exiting. *See Section 1006.2.2.7.*

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CALIFORNIA BUILDING CODE – MATRIX ADOPTION TABLE
CHAPTER 5 – GENERAL BUILDING HEIGHTS AND AREAS

(Matrix Adoption Tables are nonregulatory, intended only as an aid to the code user.
See Chapter 1 for state agency authority and building applications.)

Adopting Agency	BSC	BSC-CG	SFM	HCD			DSA			OSHPD							BSCC	DPH	AGR	DWR	CEC	CA	SL	SLC
				1	2	1/AC	AC	SS	SS/CC	1	1R	2	3	4	5	6								
Adopt entire chapter	**X**							**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**								
Adopt entire chapter as amended (amended sections listed below)			**X**	**X**	**X**																			
Adopt only those sections that are listed below						**X**	**X**																	
Chapter / Section																								
503.1			X	X																				
Figure 5-1			X																					
Table 504.3			X																					
Table 504.4			X																					
Table 506.2			X																					
506.2.1			X																					
506.2.2			X																					
508.2.4			X																					
508.3.3			X																					
Table 508.4			X																					
508.5				X	X																			
508.5, Item 2				†	†																			
508.5.3, *Exception*				X	X																			
508.5.7			X																					
508.5.8, *Exception*				X	X																			
508.5.9						X	X																	
508.5.11						X																		
Table 509.1			X																					
509.3			X																					

The state agency does not adopt sections identified with the following symbol: †

The Office of the State Fire Marshal's adoption of this chapter or individual sections is applicable to structures regulated by other state agencies pursuant to Section 1.11.

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CHAPTER

5 GENERAL BUILDING HEIGHTS AND AREAS

About this chapter:	Chapter 5 establishes the limits to which a building can be built. Building height, number of stories and building area are specified in this chapter. Chapter 5 must be used in conjunction with the occupancies established in Chapter 3 and the types of construction established in Chapter 6. This chapter also specifies the impact that mezzanines, accessory occupancies and mixed occupancies have on the overall size of a building.
ICC code development note:	Code change proposals to sections preceded by the designation [F] or [BE] will be considered by a code development committee meeting during the 2024 (Group A) Code Development Cycle. All other code change proposals will be considered by a code development committee meeting during the 2025 (Group B) Code Development Cycle.

SECTION 501—GENERAL

501.1 Scope. The provisions of this chapter control the height and area of structures hereafter erected and additions to existing structures.

SECTION 502—BUILDING ADDRESS

[F] 502.1 Address identification. New and existing buildings shall be provided with approved address identification. The address identification shall be legible and placed in a position that is visible from the street or road fronting the property. Address identification characters shall contrast with their background. Address numbers shall be Arabic numbers or alphabetical letters. Numbers shall not be spelled out. Each character shall be a minimum of 4 inches (102 mm) high with a minimum stroke width of $^1/_2$ inch (12.7 mm). Where required by the fire code official, address identification shall be provided in additional approved locations to facilitate emergency response. Where access is by means of a private road and the building address cannot be viewed from the public way, a monument, pole or other approved sign or means shall be used to identify the structure. Address identification shall be maintained.

SECTION 503—GENERAL BUILDING HEIGHT AND AREA LIMITATIONS

503.1 General. Unless otherwise specifically modified in Chapter 4 and this chapter, building height, number of stories and building area shall not exceed the limits specified in Sections 504 and 506 based on the type of construction as determined by Section 602 and the occupancies as determined by Section 302 except as modified hereafter. Building height, number of stories and building area provisions shall be applied independently. For the purposes of determining area limitations, height limitations and type of construction, each portion of a building separated by one or more fire walls complying with Section 706 shall be considered to be a separate building.

Exceptions:

1. ***[HCD 1]*** *Limited-density owner-built rural dwellings may be of any type of construction which will provide for a sound structural condition. Structural hazards which result in an unsound condition and which may constitute a substandard building are delineated by Section 17920.3 of the Health and Safety Code.*
2. ***[SFM]*** *Other than structural requirements, solar photovoltaic panels supported by a structure with no use underneath shall not constitute additional story or additional floor area and may exceed the height limit when constructed on a roof top of a building provided the following conditions are met:*
    1. *For all occupancies, the highest point of the structure/panel shall meet the lower of the two values below:*
        1. *3 feet above the allowable building height per this code.*
        2. *3 feet above the roof of the building immediately below.*
    2. *For installations on flat roofs in other than Group R-3 and R-4 occupancies, the highest point of the structure/panel shall meet the lower of the two values below:*
        1. *10 feet above the allowable building height per this code.*
        2. *10 feet above the roof of the building immediately below.*
3. ***[SFM]*** *Other than structural requirements, solar photovoltaic panels supported by a structure over parking stalls shall not constitute additional story or additional floor area and may exceed the height limit as specified in exception 2 (above) when the following conditions are met (see Figure 5-1):*
    1. *The area within the perimeter of the photovoltaic array has maximum rectangular dimension of 40 feet by 150 feet.*
    2. *The distance between solar photovoltaic array structures is a minimum of 10 feet clear.*
    3. *The driveway aisle separating solar photovoltaic array structures has a minimum width of 25 feet clear.*
    4. *Solar photovoltaic array structure is used only for parking purposes with no storage.*
    5. *Completely open on all sides (other than necessary structural supports) with no interior partitions.*

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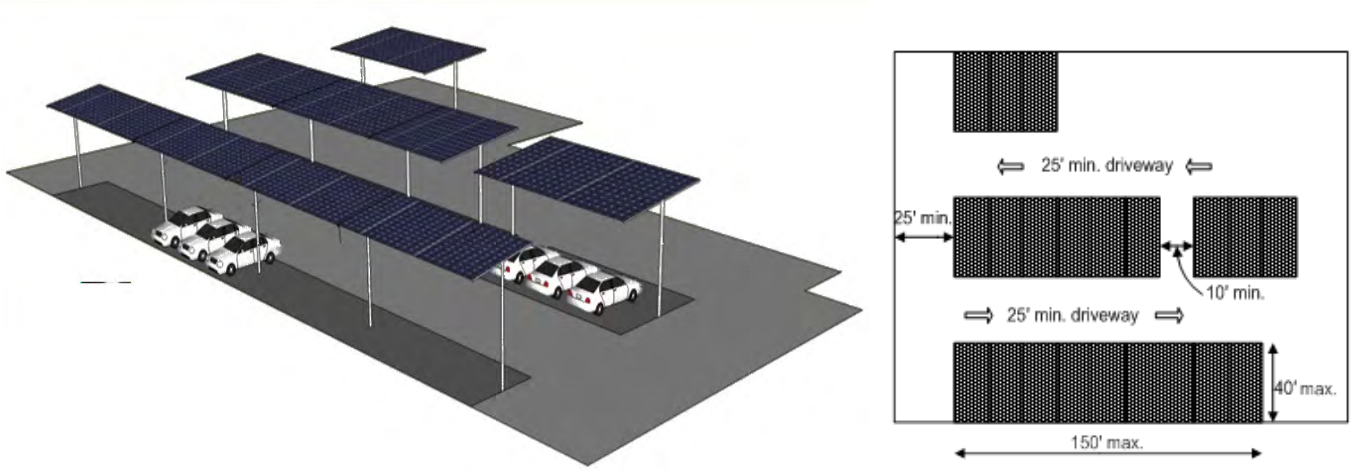
FIGURE 5-1



503.1.1 Special industrial occupancies. Buildings and structures designed to house special industrial processes that require large areas and unusual building heights to accommodate craneways or special machinery and equipment, including, among others, rolling mills; structural metal fabrication shops and foundries; or the production and distribution of electric, gas or steam power, shall be exempt from the building height, number of stories and building area limitations specified in Sections 504 and 506.

503.1.2 Buildings on same lot. Two or more buildings on the same lot shall be regulated as separate buildings or shall be considered as portions of one building where the building height, number of stories of each building and the aggregate building area of the buildings are within the limitations specified in Sections 504 and 506. The provisions of this code applicable to the aggregate building shall be applicable to each building.

503.1.3 Type I construction. Buildings of Type I construction permitted to be of unlimited tabular building heights and areas are not subject to the special requirements that allow unlimited area buildings in Section 507 or unlimited building height in Sections 503.1.1 and 504.3 or increased building heights and areas for other types of construction.

503.1.4 Occupiable roofs. A roof level or portion thereof shall not be used as an occupiable roof unless the occupancy of the roof is an occupancy that is permitted by Table 504.4 for the story immediately below the roof. The area of the occupiable roofs shall not be included in the building area as regulated by Section 506. An occupiable roof shall not be included in the building height or number of stories as regulated by Section 504, provided that the penthouses and other enclosed rooftop structures comply with Section 1511.

Exceptions:

1. The occupancy located on an occupiable roof shall not be limited to the occupancies allowed on the story immediately below the roof where the building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2 and occupant notification in accordance with Sections 907.5.2.1 and 907.5.2.3 is provided in the area of the occupiable roof. Emergency voice/alarm communication system notification per Section 907.5.2.2 shall also be provided in the area of the occupiable roof where such system is required elsewhere in the building.
2. Assembly occupancies shall be permitted on roofs of open parking spaces of Type I or Type II construction, in accordance with the exception to Section 903.2.1.6.

503.1.4.1 Enclosures over occupiable roof areas. Elements or structures enclosing the occupiable roof areas shall not extend more than 48 inches (1220 mm) above the surface of the occupiable roof.

Exceptions:

1. Penthouses constructed in accordance with Section 1511.2 and towers, domes, spires and cupolas constructed in accordance with Section 1511.5.
2. Elements or structures enclosing the occupiable roof areas where the roof deck is located more than 75 feet (22 860 mm) above the lowest level of fire department vehicle access.

SECTION 504—BUILDING HEIGHT AND NUMBER OF STORIES

504.1 General. The height, in feet, and the number of stories of a building shall be determined based on the type of construction, occupancy classification and whether there is an automatic sprinkler system installed throughout the building.

Exception: The building height of one-story aircraft hangars, aircraft paint hangars and buildings used for the manufacturing of aircraft shall not be limited where the building is provided with an automatic sprinkler system or automatic fire-extinguishing system in accordance with Chapter 9 and is entirely surrounded by public ways or yards not less in width than one and one-half times the building height.

504.1.1 Unlimited area buildings. The height of unlimited area buildings shall be designed in accordance with Section 507.

504.1.2 Special provisions. The special provisions of Section 510 permit the use of special conditions that are exempt from, or modify, the specific requirements of this chapter regarding the allowable heights of buildings based on the occupancy classification and type of construction, provided the special condition complies with the provisions specified in Section 510.

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504.2 Mixed occupancy. In a building containing mixed occupancies in accordance with Section 508, no individual occupancy shall exceed the height and number of story limits specified in this section for the applicable occupancies.

504.3 Height in feet. The maximum height, in feet, of a building shall not exceed the limits specified in Table 504.3.

Exception: Towers, spires, steeples and other rooftop structures shall be constructed of materials consistent with the required type of construction of the building except where other construction is permitted by Section 1511.2.4. Such structures shall not be used for habitation or storage. The structures shall be unlimited in height where of noncombustible materials and shall not extend more than 20 feet (6096 mm) above the allowable building height where of combustible materials (see Chapter 15 for additional requirements).

TABLE 504.3—ALLOWABLE BUILDING HEIGHT IN FEET ABOVE GRADE PLANE[a, i]

OCCUPANCY CLASSIFICATION	TYPE OF CONSTRUCTION												
	See Footnotes	Type I		Type II		Type III		Type IV				Type V	
		A	B	A	B	A	B	A	B	C	HT	A	B
B, F, M, S, U	NS[b]	UL	160	65	55	65	55	65	65	65	65	50	40
	S	UL	180	85	75	85	75	270	180	85	85	70	60
A, E	*NS[b]*	*UL*	*160*	*65*	*55*	*65*	*55*	*65*	*65*	*65*	*65*	*50*	*40*
	S (without area increase)	*UL*	*180*	*85*	*75*	*85*	*75*	*270*	*180*	*85*	*85*	*70*	*60*
	S (with area increase)	*UL*	*160*	*65*	*55*	*65*	*55*	*250*	*160*	*65*	*65*	*50*	*40*
H-1, H-2, H-3, H-5, *L*	NS[c, d]	UL	160	65	55	65	55	120	90	*85*	65	50	40
	S (without area increase)												
	S (with area increase)	*UL*	*160*	*65*	*55*	*65*	*55*				*65*	*50*	*40*
H-4	NS[c, d]	UL	160	65	55	65	55	65	65	65	65	50	40
	S (without area increase)	UL	180	85	75	85	75	140	100	85	85	70	60
	S (with area increase)	*UL*	*160*	*65*	*55*	*65*	*55*	*120*	*160*	*65*	*65*	*50*	*40*
I-3	NS[d, e]	UL	160	*NP*	*NP*	*NP*	*NP*	*NP*	*NP*	*NP*	*NP*	*NP*	*NP*
	S (without area increase)	UL	180	*NP*	*NP*	*NP*	*NP*	*NP*	*NP*	*NP*	*NP*	*NP*	*NP*
	S (with area increase)	*UL*	*160*	*NP*	*NP*	*NP*	*NP*	*NP*	*NP*	*NP*	*NP*	*NP*	*NP*
I-2	NS[d, e, f]	UL	160	65	55	65	*NP*	*NP*	*NP*	*NP*	65	50	*NP*
	S (without area increase)	UL	180	85				*NP*	*NP*	*NP*			
	S (with area increase)	*UL*	*160*	*65*				*NP*	*NP*	*NP*			
I-4	NS[d, g]	UL	160	65	55	65	55	65	65	65	65	50	40
	S (without area increase)	*UL*	*180*	*85*	*75*	*85*	*75*	*180*	*120*	*85*	*85*	*70*	*60*
	S (with area increase)	*UL*	*160*	*65*	*55*	*65*	*55*	*160*	*100*	*65*	*65*	*50*	*50*
R-*1*[h]	NS[d]	UL	160	65	55	65	55	65	65	65	65	50	40
	S13D	60	60	60	60	60	60	60	60	60	60	50	40
	S13R	60	60	60	60	60	60	60	60	60	60	60	60
	S (without area increase)	UL	180	85	75	85	75	270	180	85	85	70	60
	S (with area increase)	*UL*	*160*	*65*	*55*	*65*	*55*	*250*	*160*	*65*	*65*	*50*	*40*
R-2[h]	*NS[d]*	*UL*	*160*	*65*	*55*	*65*	*55*	*65*	*65*	*65*	*65*	*50*	*40*
	S13R	*60*	*60*	*60*	*55*	*60*	*55*	*60*	*60*	*60*	*60*	*50*	*40*
	S (without area increase)	*UL*	*180*	*85*	*75*	*85*	*75*	*270*	*180*	*85*	*85*	*70*	*60*
	S (with area increase)	*UL*	*160*	*65*	*55*	*65*	*55*	*250*	*160*	*65*	*65*	*60*[j]	*40*
R-2.1[h]	*NS[d]*	*UL*	*160*	*65*	*55*	*65*	*55*	*65*	*NP*	*NP*	*NP*	*50*	*40*
	S13D	*60*	*60*	*60*	*55*	*60*	*55*	*60*	*NP*	*NP*	*NP*	*50*	*40*
	S13R	*60*	*60*	*60*	*55*	*60*	*55*	*60*	*NP*	*NP*	*NP*	*50*	*40*
	S	*UL*	*160*	*65*	*55*	*65*	*55*	*270*	*NP*	*NP*	*NP*	*50*	*40*
R-2.2[h]	*NS[d]*	*NP*	*NP*	*NP*	*NP*	*NP*	*NP*	*NP*	*NP*	*NP*	*NP*	*NP*	*NP*
	S (without area increase)	*UL*	*180*	*85*	*NP*	*85*	*NP*	*270*	*180*	*85*	*85*	*70*	*NP*
	S (with area increase)	*UL*	*160*	*65*	*NP*	*65*	*NP*	*250*	*160*	*65*	*65*	*60*[j]	*NP*
R-3, R-3.1[h]	*NS[d]*	*UL*	*160*	*65*	*55*	*65*	*55*	*65*	*65*	*65*	*65*	*50*	*40*
	S13D	*60*	*60*	*60*	*60*	*60*	*60*	*60*	*60*	*60*	*60*	*50*	*40*
	S13R	*60*	*60*	*60*	*55*	*60*	*55*	*60*	*60*	*60*	*60*	*60*	*60*
	S	*UL*	*160*	*65*	*55*	*65*	*55*	*270*	*180*	*85*	*65*	*70*	*60*
R-4[h]	*NS[d]*	*UL*	*160*	*65*	*55*	*65*	*55*	*65*	*65*	*65*	*65*	*50*	*40*
	S13D	*60*	*60*	*60*	*55*	*60*	*55*	*60*	*60*	*60*	*60*	*50*	*40*
	S13R	*60*	*60*	*60*	*55*	*60*	*55*	*60*	*60*	*60*	*60*	*50*	*40*
	S	*UL*	*160*	*65*	*55*	*65*	*55*	*270*	*180*	*85*	*65*	*50*	*40*

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TABLE 504.3—ALLOWABLE BUILDING HEIGHT IN FEET ABOVE GRADE PLANE[a, i]—continued

For SI: 1 foot = 304.8 mm.

UL = Unlimited; NS = Buildings not equipped throughout with an automatic sprinkler system; S = Buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1; S13R = Buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.2; S13D = Buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.3.

a. See Chapters 4 and 5 for specific exceptions to the allowable height in this chapter.

b. See Section 903.2 for the minimum thresholds for protection by an automatic sprinkler system for specific occupancies.

c. New Group H *and all Group L* occupancies are required to be protected by an automatic sprinkler system in accordance with Section 903.2.5.

d. The NS value is only for use in evaluation of existing building height in accordance with the *California Existing Building Code*.

e. New Group I-3 occupancies are required to be protected by an automatic sprinkler system in accordance with Section 903.2.6.

f. New and existing Group I-2 occupancies are required to be protected by an automatic sprinkler system in accordance with Section 903.2.6 and with Section 1103.5 of the *California Fire Code*.

g. For new Group I-4 occupancies, see Exceptions 2 and 3 of Section 903.2.6.

h. New Group R occupancies are required to be protected by an automatic sprinkler system in accordance with Section 903.2.8.

i. In other than Group A, E, H, I, L and R occupancies, high-rise buildings, and other applications listed in Section 1.11 regulated by the Office of the State Fire Marshal, the S increases for height and stories in Tables 504.3 and 504.4 are permitted in addition to the S area increase in accordance with Table 506.2.

j. For Group R-2 buildings of Type VA construction equipped throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.1, S area increase is permitted in addition to the height and story increase provided the height shall not exceed 60 feet and 4 stories.

504.4 Number of stories. The maximum number of stories above grade plane of a building shall not exceed the limits specified in Table 504.4.

TABLE 504.4—ALLOWABLE NUMBER OF STORIES ABOVE GRADE PLANE[a, b, n]

OCCUPANCY CLASSIFICATION	TYPE OF CONSTRUCTION												
	See Footnotes	Type I		Type II		Type III		Type IV				Type V	
		A	B	A	B	A	B	A	B	C	HT	A	B
A-1	NS	UL	5	3	2	3	2	3	3	3	3	2	1
	S *(without area increase)*	UL	6	4	3	4	3	9	6	4	4	3	2
	S (with area increase)	*UL*	*5*	*3*	*2*	*3*	*2*	*8*	*5*	*3*	*3*	*2*	*1*
A-2	NS	UL	11	3	2	3	2	3	3	3	3	2	1
	S *(without area increase)*	UL	12	4	3	4	3	18	12	6	4	3	2
	S (with area increase)	*UL*	*11*	*3*	*2*	*3*	*2*	*17*	*11*	*5*	*3*	*2*	*1*
A-3	NS	UL	11	3	2	3	2	3	3	3	3	2	1
	S *(without area increase)*	UL	12	4	3	4	3	18	12	6	4	3	2
	S (with area increase)	*UL*	*11*	*3*	*2*	*3*	*2*	*17*	*11*	*5*	*3*	*2*	*1*
A-4	NS	UL	11	3	2	3	2	3	3	3	3	2	1
	S *(without area increase)*	UL	12	4	3	4	3	18	12	6	4	3	2
	S (with area increase)	*UL*	*11*	*3*	*2*	*3*	*2*	*17*	*11*	*5*	*3*	*2*	*1*
A-5	NS	UL	UL	UL	UL	UL	UL	1	1	1	UL	UL	UL
	S	UL	UL	UL	UL	UL	UL	UL	UL	UL	UL	UL	UL
B	NS	UL	11	5	3	5	3	5	5	5	5	3	2
	S	UL	12	6	4	6	4	18	12	9	6	4	3
E	NS	UL	5	3	2	3	2	3	3	3	3	1	1
	S *(without area increase)*	UL	6	4	3	4	3	9	6	4	4	2	2
	S (with area increase)	*UL*	*5*	*3*	*2*	*3*	*2*	*8*	*7*	*3*	*3*	*1*	*1*
F-1	NS	UL	11	4	2	3	2	3	3	3	4	2	1
	S	UL	12	5	3	4	3	10	7	5	5	3	2
F-2	NS	UL	11	5	3	4	3	5	5	5	5	3	2
	S	UL	12	6	4	5	4	12	8	6	6	4	3
H-1	NS[c, d]	1	1	1	1	1	1	NP	NP	NP	1	1	NP
	S							1	1	1			
H-2	NS[c, d]	*20*	3	2	1	2	1	1	1	1	2	1	1
	S							2	2	2			
H-3	NS[c, d]	*20*	6	4	2	4	2	3	3	3	4	2	1
	S							4	4	4			
H-4	NS[c, d]	UL	7	5	3	5	3	5	5	5	5	3	2
	S *(without area increase)*	UL	8	6	4	6	4	8	7	6	6	4	3
	S (with area increase)	*20*	*7*	*5*	*3*	*5*	*3*	*7*	*6*	*5*	*5*	*3*	*2*
H-5	NS[c, d]	4	4	3	3	3	3	2	2	2	3	3	2
	S							3	3	3			
I-2 [i, j]	NS[d, f]	UL	4	2	1	1	NP	NP	NP	NP	1	1	NP
	S *(without area increase)*	UL	5	3				*NP*	*NP*	*NP*			
	S (with area increase)	*UL*	*4*	*2*				*NP*	*NP*	*NP*			

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TABLE 504.4—ALLOWABLE NUMBER OF STORIES ABOVE GRADE PLANE[a, b, n]—continued

OCCUPANCY CLASSIFICATION	See Footnotes	TYPE OF CONSTRUCTION											
		Type I		Type II		Type III		Type IV				Type V	
		A	B	A	B	A	B	A	B	C	HT	A	B
I-3	NS[d, e]	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP
	S *(without area increase)*	UL	5	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP
	S (with area increase)	UL	*2*	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP
I-4[p]	NS[d, g]	UL	5	3	2	3	2	3	3	3	3	1	1
	S *(without area increase)*	UL	6	4	3	4	3	9	6	4	4	2	2
	S (with area increase)	*UL*	*5*	*3*	*2*	*3*	*2*	*8*	*5*	*3*	*3*	*1*	*1*
L	*NS*	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP
	S	*20*	*6*	*5*	*3*	*5*	*3*	*8*	*6*	*5*	*5*	*3*	*2*
M	NS	UL	11	4	2	4	2	4	4	4	4	3	1
	S	UL	12	5	3	5	3	12	8	6	5	4	2
R-1[h]	NS[d]	UL	11	4	4	4	4	4	4	4	4	3	2
	S13R	4	4									4	3
	S *(without area increase)*	UL	12	5	5	5	5	18	12	8	5	4	3
	S (with area increase)	*UL*	*11*	*4*	*4*	*4*	*4*	*17*	*11*	*7*	*4*	*3*	*2*
R-2[h]	NS[d]	UL	11	4	4	4	4	4	4	4	4	3	2
	S13R	4	4	4								*3*	*2*
	S *(without area increase)*	UL	12	5	5	5	5	18	12	8	5	4	3
	S (with area increase)	*UL*	*11*	*4*	*4*	*4*	*4*	*17*	*11*	*7*	*4*	*4[o]*	*2*
R-2.1[h]	*NS[d]*	*UL*	*6[l]*	*3[k]*	*NP*	*3[k]*	*NP*	*4*	*NP*	*NP*	*NP*	*3[k]*	*NP*
	S13R	*UL*	*4[l]*	*3[k]*	*NP*	*3[k]*	*NP*	*4*	*NP*	*NP*	*NP*	*3[k]*	*NP*
	S	*UL*	*6[l]*	*3[k]*	*NP*	*3[k]*	*NP*	*10*	*NP*	*NP*	*NP*	*3[k]*	*NP*
R-2.2[h]	*NS[d]*	*NP*	*NP*	*NP*	*NP*	*NP*	*NP*	*NP*	*NP*	*NP*	*NP*	*NP*	*NP*
	S *(without area increase)*	*UL*	*12*	*5*	*NP*	*5*	*NP*	*18*	*12*	*8*	*5*	*4*	*NP*
	S (with area increase)	*UL*	*11*	*4*	*NP*	*4*	*NP*	*17*	*11*	*7*	*4*	*4[o]*	*NP*
R-3, *R-3.1*[h]	NS[d]	UL	11	4	4	4	4	4	4	4	4	3	3
	S13D	4	4									3	3
	S13R	4	4									4	4
	S	UL	12	5	5	5	5	18	12	5	5	4	4
R-4[h]	NS[d]	UL	11[l]	4[k]	4[m]	4[k]	4[m]	4[m]	4[m]	4[m]	4[m]	3[k]	2[m]
	S13D	4	4[l]									3[k]	2[m]
	S13R	4	4[l]									4	3
	S	UL	*11[l]*	5	5	5	5	*11[l]*	*5*	5	5	4	3
S-1	NS	UL	11	4	2	3	2	4	4	4	4	3	1
	S	UL	12	5	4	4	4	10	7	5	5	4	2
S-2[i]	NS	UL	11	5	3	4	3	4	4	4	5	4	2
	S	UL	12	6	4	5	4	12	8	5	6	5	3
U	NS	UL	5	4	2	3	2	4	4	4	4	2	1
	S	UL	6	5	3	4	3	9	6	5	5	3	2

UL = Unlimited; NP = Not Permitted; NS = Buildings not equipped throughout with an automatic sprinkler system; S = Buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1; S13R = Buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.2; S13D = Buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.3.

a. See Chapters 4 and 5 for specific exceptions to the allowable height in this chapter.
b. See Section 903.2 for the minimum thresholds for protection by an automatic sprinkler system for specific occupancies.
c. New Group H occupancies are required to be protected by an automatic sprinkler system in accordance with Section 903.2.5.
d. The NS value is only for use in evaluation of existing building height in accordance with the *California Existing Building Code*.
e. New Group I-3 occupancies are required to be protected by an automatic sprinkler system in accordance with Section 903.2.6.
f. New and existing Group I-2 occupancies are required to be protected by an automatic sprinkler system in accordance with Section 903.2.6 and Section 1103.5 of the *California Fire Code*.
g. For new Group I-4 occupancies, see Exceptions 2 and 3 of Section 903.2.6.
h. New Group R occupancies are required to be protected by an automatic sprinkler system in accordance with Section 903.2.8.
i. See Sections 407.1.1 and 408.1.2 for specific exceptions to construction type, allowable building areas and allowable heights.
j. Restraint shall not be permitted in any building except in Group I-3 occupancies constructed for such use (see Section 408.1.2).
k. Nonambulatory persons shall be limited to the first 2 stories.
l. Nonambulatory persons shall be limited to the first 5 stories.
m. Nonambulatory elderly clients are not permitted in buildings of these types of construction. See Sections 435.3.3 and 435.3.4.
n. In other than Group A, E, H, I, L and R occupancies, high-rise buildings, and other applications listed in Section 1.11 regulated by the Office of the State Fire Marshal, the S increases for height and stories in Tables 504.3 and 504.4 are permitted in addition to the S area increase in accordance with Table 506.2.
o. For Group R-2 buildings of Type VA construction equipped throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.1, S area increase is permitted in addition to the height and story increase provided the height shall not exceed 60 feet and 4 stories.
p. See Section 436.1 for additional regulations for child-care centers and adult day care.

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SECTION 505—MEZZANINES AND EQUIPMENT PLATFORMS

505.1 General. Mezzanines shall comply with Section 505.2. Equipment platforms shall comply with Section 505.3.

505.2 Mezzanines. A mezzanine or mezzanines in compliance with Section 505.2 shall be considered a portion of the story below. Such mezzanines shall not contribute to either the building area or number of stories as regulated by Section 503.1. The area of the mezzanine shall be included in determining the fire area. The clear height above and below the mezzanine floor construction shall be not less than 7 feet (2134 mm).

505.2.1 Area limitation. The aggregate area of a mezzanine or mezzanines within a room shall be not greater than one-third of the floor area of that room or space in which they are located. The enclosed portion of a room shall not be included in a determination of the floor area of the room in which the mezzanine is located. In determining the allowable mezzanine area, the area of the mezzanine shall not be included in the floor area of the room.

Exceptions:

1. The aggregate area of mezzanines in buildings and structures of Type I or II construction for special industrial occupancies in accordance with Section 503.1.1 shall be not greater than two-thirds of the floor area of the room.
2. The aggregate area of mezzanines in buildings and structures of Type I or II construction shall be not greater than one-half of the floor area of the room in buildings and structures equipped throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.1 and an approved emergency voice/alarm communication system in accordance with Section 907.5.2.2.
3. The aggregate area of a mezzanine within a dwelling unit that is located in a building equipped throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2 shall not be greater than one-half of the floor area of the room, provided that:
    3.1. Except for enclosed closets and bathrooms, the mezzanine shall be open to the room in which such mezzanine is located;
    3.2. The opening to the room shall be unobstructed except for walls not more than 42 inches (1067 mm) in height, columns and posts; and
    3.3. Exceptions to Section 505.2.3 shall not be permitted.

505.2.1.1 Aggregate area of mezzanines and equipment platforms. Where a room contains both a mezzanine and an equipment platform, the aggregate area of the two raised floor levels shall be not greater than two-thirds of the floor area of that room or space in which they are located. The area of the mezzanine shall not exceed the area determined in accordance with Section 505.2.1.

505.2.2 Means of egress. The means of egress for mezzanines shall comply with the applicable provisions of Chapter 10.

505.2.3 Openness. A mezzanine shall be open and unobstructed to the room in which such mezzanine is located except for walls not more than 42 inches (1067 mm) in height, columns and posts.

Exceptions:

1. Mezzanines or portions thereof are not required to be open to the room in which the mezzanines are located, provided that the occupant load of the aggregate area of the enclosed space is not greater than 10.
2. A mezzanine having two or more exits or access to exits is not required to be open to the room in which the mezzanine is located.
3. Mezzanines or portions thereof are not required to be open to the room in which the mezzanines are located, provided that the aggregate floor area of the enclosed space is not greater than 10 percent of the mezzanine area.
4. In industrial facilities, mezzanines used for control equipment are permitted to be glazed on all sides.
5. In occupancies other than Groups H and I, which are no more than two stories above grade plane and equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1, a mezzanine having two or more exits or access to exits shall not be required to be open to the room in which the mezzanine is located.

505.3 Equipment platforms. Equipment platforms in buildings shall not be considered as a portion of the floor below. Such equipment platforms shall not contribute to either the building area or the number of stories as regulated by Section 503.1. The area of the equipment platform shall not be included in determining the fire area in accordance with Section 903. Equipment platforms shall not be a part of any mezzanine and such platforms and the walkways, stairways, alternating tread devices and ladders providing access to an equipment platform shall not serve as a part of the means of egress from the building.

505.3.1 Area limitation. The aggregate area of all equipment platforms within a room shall be not greater than two-thirds of the area of the room in which they are located. Where an equipment platform is located in the same room as a mezzanine, the area of the mezzanine shall be determined by Section 505.2.1 and the combined aggregate area of the equipment platforms and mezzanines shall be not greater than two-thirds of the room in which they are located. The area of the mezzanine shall not exceed the area determined in accordance with Section 505.2.1.

505.3.2 Automatic sprinkler system. Where located in a building that is required to be protected by an automatic sprinkler system, equipment platforms shall be fully protected by sprinklers above and below the platform, where required by the standards referenced in Section 903.3.

505.3.3 Guards. Equipment platforms shall have guards where required by Section 1015.2.

SECTION 506—BUILDING AREA

506.1 General. The floor area of a building shall be determined based on the type of construction, occupancy classification, whether there is an automatic sprinkler system installed throughout the building and the amount of building frontage on public way or open space.

506.1.1 Unlimited area buildings. Unlimited area buildings shall be designed in accordance with Section 507.

506.1.2 Special provisions. The special provisions of Section 510 permit the use of special conditions that are exempt from, or modify, the specific requirements of this chapter regarding the allowable areas of buildings based on the occupancy classification and type of construction, provided the special condition complies with the provisions specified in Section 510.

506.1.3 Basements. Basements need not be included in the total allowable floor area of a building provided the total area of such basements does not exceed the area permitted for a one-story above grade plane building.

506.2 Allowable area determination. The allowable area of a building shall be determined in accordance with the applicable provisions of Sections 506.2.1, 506.2.2 and 506.3.

TABLE 506.2—ALLOWABLE AREA FACTOR (A_t = NS, S1, S13R, S13D or SM, as applicable) IN SQUARE FEET[a, b, j]

OCCUPANCY CLASSIFICATION	SEE FOOTNOTES	TYPE OF CONSTRUCTION											
		Type I		Type II		Type III		Type IV				Type V	
		A	B	A	B	A	B	A	B	C	HT	A	B
A-1	NS	UL	UL	15,500	8,500	14,000	8,500	45,000	30,000	18,750	15,000	11,500	5,500
	S1	UL	UL	62,000	34,000	56,000	34,000	180,000	120,000	75,000	60,000	46,000	22,000
	SM *(without height increase)*	UL	UL	46,500	25,500	42,000	25,500	135,000	90,000	56,250	45,000	34,500	16,500
	SM (with height increase)	*UL*	*UL*	*15,500*	*8,500*	*14,000*	*8,500*	*45,000*	*30,000*	*18,750*	*15,000*	*11,500*	*5,500*
A-2	NS	UL	UL	15,500	9,500	14,000	9,500	45,000	30,000	18,750	15,000	11,500	6,000
	S1	UL	UL	62,000	38,000	56,000	38,000	180,000	120,000	75,000	60,000	46,000	24,000
	SM *(without height increase)*	UL	UL	46,500	28,500	42,000	28,500	135,000	90,000	56,250	45,000	34,500	18,000
	SM (with height increase)	*UL*	*UL*	*15,500*	*9,500*	*14,000*	*9,500*	*45,000*	*30,000*	*18,750*	*15,000*	*11,500*	*6,000*
A-3	NS	UL	UL	15,500	9,500	14,000	9,500	45,000	30,000	18,750	15,000	11,500	6,000
	S1	UL	UL	62,000	38,000	56,000	38,000	180,000	120,000	75,000	60,000	46,000	24,000
	SM *(without height increase)*	UL	UL	46,500	28,500	42,000	28,500	135,000	90,000	56,250	45,000	34,500	18,000
	SM (with height increase)	*UL*	*UL*	*15,500*	*9,500*	*14,000*	*9,500*	*45,000*	*30,000*	*18,750*	*15,000*	*11,500*	*6,000*
A-4	NS	UL	UL	15,500	9,500	14,000	9,500	45,000	30,000	18,750	15,000	11,500	6,000
	S1	UL	UL	62,000	38,000	56,000	38,000	180,000	120,000	75,000	60,000	46,000	24,000
	SM *(without height increase)*	UL	UL	46,500	28,500	42,000	28,500	135,000	90,000	56,250	45,000	34,500	18,000
	SM (with height increase)	*UL*	*UL*	*15,500*	*9,500*	*14,000*	*9,500*	*45,000*	*30,000*	*18,750*	*15,000*	*11,500*	*6,000*
A-5	NS	UL	UL	UL	UL	UL	UL	UL	UL	UL	UL	UL	UL
	S1												
	SM												
B	NS	UL	UL	37,500	23,000	28,500	19,000	108,000	72,000	45,000	36,000	18,000	9,000
	S1	UL	UL	150,000	92,000	114,000	76,000	432,000	288,000	180,000	144,000	72,000	36,000
	SM	UL	UL	112,500	69,000	85,500	57,000	324,000	216,000	135,000	108,000	54,000	27,000
E	NS	UL	UL	26,500	14,500	23,500	14,500	76,500	51,000	31,875	25,500	18,500	9,500
	S1	UL	UL	106,000	58,000	94,000	58,000	306,000	204,000	127,500	102,000	74,000	38,000
	SM *(without height increase)*	UL	UL	79,500	43,500	70,500	43,500	229,500	153,000	95,625	76,500	55,500	28,500
	SM (with height increase)	*UL*	*UL*	*26,500*	*14,500*	*23,500*	*14,500*	*76,500*	*51,000*	*31,875*	*25,500*	*18,500*	*9.500*
F-1	NS	UL	UL	25,000	15,500	19,000	12,000	100,500	67,000	41,875	33,500	14,000	8,500
	S1	UL	UL	100,000	62,000	76,000	48,000	402,000	268,000	167,500	134,000	56,000	34,000
	SM	UL	UL	75,000	46,500	57,000	36,000	301,500	201,000	125,625	100,500	42,000	25,500
F-2	NS	UL	UL	37,500	23,000	28,500	18,000	151,500	101,000	63,125	50,500	21,000	13,000
	S1	UL	UL	150,000	92,000	114,000	72,000	606,000	404,000	252,500	202,000	84,000	52,000
	SM	UL	UL	112,500	69,000	85,500	54,000	454,500	303,000	189,375	151,500	63,000	39,000
H-1	NS[c]	21,000	16,500	11,000	7,000	9,500	7,000	10,500	10,500	10,500	10,500	7,500	NP
	S1												

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TABLE 506.2—ALLOWABLE AREA FACTOR (A_t = NS, S1, S13R, S13D or SM, as applicable) IN SQUARE FEET[a, b, j]—continued

OCCUPANCY CLASSIFICATION	SEE FOOTNOTES	TYPE OF CONSTRUCTION											
		Type I		Type II		Type III		Type IV				Type V	
		A	B	A	B	A	B	A	B	C	HT	A	B
H-2	NS[c]	21,000	16,500	11,000	7,000	9,500	7,000	10,500	10,500	10,500	10,500	7,500	3,000
	S1												
	SM												
H-3	NS[c]	UL	60,000	26,500	14,000	17,500	13,000	25,500	25,500	25,500	25,500	10,000	5,000
	S1												
	SM												
H-4	NS[c, d]	UL	UL	37,500	17,500	28,500	17,500	72,000	54,000	40,500	36,000	18,000	6,500
	S1	UL	UL	150,000	70,000	114,000	70,000	288,000	216,000	162,000	144,000	72,000	26,000
	SM *(without height increase)*	UL	UL	112,500	52,500	85,500	52,500	216,000	162,000	121,500	108,000	54,000	19,500
	SM (with height increase)	*UL*	*UL*	*37,500*	*17,500*	*28,500*	*17,500*	*72,000*	*54,000*	*40,500*	*36,000*	*18,000*	*6,500*
H-5	NS[c, d]	UL	UL	37,500	23,000	28,500	19,000	72,000	54,000	40,500	36,000	18,000	9,000
	S1	UL	UL	150,000	92,000	114,000	76,000	288,000	216,000	162,000	144,000	72,000	36,000
	SM *(without height increase)*	UL	UL	112,500	69,000	85,500	57,000	216,000	162,000	121,500	108000	54,000	27,000
	SM (with height increase)	*UL*	*UL*	*37,500*	*23,000*	*28,500*	*19,000*	*72,000*	*54,000*	*40,500*	*36,000*	*18,000*	*9,000*
I-2	NS[d, f]	UL	UL	15,000	11,000	12,000	NP	*NP*	*NP*	*NP*	12,000	9,500	NP
	S1	UL	UL	60,000	44,000	48,000	NP	*NP*	*NP*	*NP*	48,000	38,000	NP
	SM *(without height increase)*	UL	UL	45,000	33,000	36,000	NP	*NP*	*NP*	*NP*	36,000	28,500	NP
	SM (with height increase)	*UL*	*UL*	*15,000*	*11,000*	*12,000*	*NP*	*NP*	*NP*	*NP*	*12,000*	*9,500*	*NP*
I-3	NS[d, e]	UL	*15,100*	*NP*	*NP*	*NP*	*NP*	*NP*	*NP*	*NP*	*NP*	*NP*	*NP*
	S1	UL	*45,300*	*NP*	*NP*	*NP*	*NP*	*NP*	*NP*	*NP*	*NP*	*NP*	*NP*
	SM *(without height increase)*	UL	*30,200*	*NP*	*NP*	*NP*	*NP*	*NP*	*NP*	*NP*	*NP*	*NP*	*NP*
	SM (with height increase)	*UL*	*15,100*	*NP*	*NP*	*NP*	*NP*	*NP*	*NP*	*NP*	*NP*	*NP*	*NP*
I-4	NS[d, g]	UL	60,500	26,500	13,000	23,500	13,000	76,500	51,000	25,500	25,500	18,500	9,000
	S1	UL	121,000	106,000	52,000	94,000	52,000	306,000	204,000	102,000	102,000	74,000	36,000
	SM *(without height increase)*	UL	181,500	79,500	39,000	70,500	39,000	229,500	153,000	76,500	76,500	55,500	27,000
	SM (with height increase)	*UL*	*60,500*	*26,500*	*13,000*	*23,500*	*13,000*	*76,500*	*51,000*	*25,500*	*25,500*	*18,500*	*9,000*
L	*NS*	*UL*	*60,000*	*37,500*	*17,500*	*28,500*	*17,500*	*60,000*	*37,500*	*36,000*	*36,000*	*18,000*	*6,500*
	S1												
	SM												
M	NS	UL	UL	21,500	12,500	18,500	12,500	61,500	41,000	26,625	20,500	14,000	9,000
	S1	UL	UL	86,000	50,000	74,000	50,000	246,000	164,000	102,500	82,000	56,000	36,000
	SM	UL	UL	64,500	37,500	55,500	37,500	184,500	123,000	76,875	61,500	42,000	27,000
R-1[h]	NS[d]	UL	UL	24,000	16,000	24,000	16,000	61,500	41,000	25,625	20,500	12,000	7,000
	S13R												
	S1	UL	UL	96,000	64,000	96,000	64,000	246,000	164,000	102,500	82,000	48,000	28,000
	SM *(without height increase)*	UL	UL	72,000	48,000	72,000	48,000	184,500	123,000	76,875	61,500	36,000	21,000
	SM (with height increase)	*UL*	*UL*	*24,000*	*16,000*	*24,000*	*16,000*	*61,500*	*41,000*	*25,625*	*20,500*	*12,000*	*7,000*
R-2[h]	NS[d]	UL	UL	24,000	16,000	24,000	16,000	61,500	41,000	25,625	20,500	12,000	7,000
	S13R												
	S1	UL	UL	96,000	64,000	96,000	64,000	246,000	164,000	102,500	82,000	48,000	28,000
	SM *(without height increase)*	UL	UL	72,000	48,000	72,000	48,000	184,500	123,000	76,875	61,500	36,000	21,000
	SM (with height increase)	*UL*	*UL*	*24,000*	*16,000*	*24,000*	*16,000*	*61,500*	*41,000*	*25,625*	*20,500*	*12,000*	*7,000*
R-2 Type VA construction[k]	*NS*[d]	*NP*	*NP*	*NP*	*NP*	*NP*	*NP*	*NP*	*NP*	*NP*	*NP*	*12,000*	*NP*
	S13R	*NP*	*NP*	*NP*	*NP*	*NP*	*NP*	*NP*	*NP*	*NP*	*NP*	*12,000*	*NP*
	S1	*NP*	*NP*	*NP*	*NP*	*NP*	*NP*	*NP*	*NP*	*NP*	*NP*	*48,000*	*NP*
	SM *(without height increase)*	*NP*	*NP*	*NP*	*NP*	*NP*	*NP*	*NP*	*NP*	*NP*	*NP*	*36,000*	*NP*
	SM (with height increase)	*NP*	*NP*	*NP*	*NP*	*NP*	*NP*	*NP*	*NP*	*NP*	*NP*	*36,000*[j]	*NP*

TABLE 506.2—ALLOWABLE AREA FACTOR (A_t = NS, S1, S13R, S13D or SM, as applicable) IN SQUARE FEET[a, b, j]—continued

OCCUPANCY CLASSIFICATION	SEE FOOTNOTES	TYPE OF CONSTRUCTION											
		Type I		Type II		Type III		Type IV				Type V	
		A	B	A	B	A	B	A	B	C	HT	A	B
R-2.1[h]	*NS*[d]	*UL*	*55,000*	*19,000*	*NP*	*16,500*	*NP*	*54,000*	*NP*	*NP*	*NP*	*10,500*	*NP*
	S13R	*UL*	*55,000*	*19,000*	*NP*	*16,500*	*NP*					*10,500*	*NP*
	S1	*UL*	*220,000*	*76,000*	*NP*	*66,000*	*NP*	*216,000*	*NP*	*NP*	*NP*	*42,000*	*NP*
	SM *(without height increase)*	*UL*	*165,000*	*57,000*	*NP*	*49,500*	*NP*	*162,000*	*NP*	*NP*	*NP*	*31,500*	*NP*
	SM (with height increase)	*UL*	*55,000*	*19,000*	*NP*	*16,500*	*NP*	*54,000*	*NP*	*NP*	*NP*	*10,500*	*NP*
R-2.2[h]	*NS*[l]	*UL*	*UL*	*24,000*	*NP*	*24,000*	*NP*	*61,500*	*41,000*	*25,625*	*20,500*	*12,000*	*NP*
	S1	*UL*	*UL*	*96,000*	*NP*	*96,000*	*NP*	*246,000*	*164,000*	*102,500*	*82,000*	*48,000*	*NP*
	SM *(without height increase)*	*UL*	*UL*	*72,000*	*NP*	*72,000*	*NP*	*184,500*	*123,000*	*76,875*	*61,500*	*36,000*	*NP*
	SM (with height increase)	*UL*	*UL*	*24,000*	*NP*	*24,000*	*NP*	*61,500*	*41,000*	*25,625*	*20,500*	*12,000*	*NP*
R-3, *R-3-1*[h]	NS[d]	UL	UL	UL	UL	UL	UL	UL	UL	UL	UL	UL	UL
	S13D												
	S13R												
	S1												
	SM												
R-4[h]	NS[d]	UL	UL	24,000	16,000	24,000	16,000	61,500	41,000	25,625	20,500	12,000	7,000
	S13D												
	S13R												
	S1	UL	UL	96,000	64,000	96,000	64,000	246,000	164,000	102,500	82,000	48,000	28,000
	SM *(without height increase)*	UL	UL	72,000	48,000	72,000	48,000	184,500	123,000	76,875	61,500	36,000	21,000
	SM (with height increase)	*UL*	*UL*	*24,000*	*16,000*	*24,000*	*16,000*	*61,500*	*41,000*	*25,625*	*20,500*	*12,000*	*7,000*
S-1	NS	UL	48,000	26,000	17,500	26,000	17,500	76,500	51,000	31,875	25,500	14,000	9,000
	S1	UL	192,000	104,000	70,000	104,000	70,000	306,000	204,000	127,500	102,000	56,000	36,000
	SM	UL	144,000	78,000	52,500	78,000	52,500	229,500	153,000	95,625	76,500	42,000	27,000
S-2	NS	UL	79,000	39,000	26,000	39,000	26,000	115,500	77,000	48,125	38,500	21,000	13,500
	S1	UL	316,000	156,000	104,000	156,000	104,000	462,000	308,000	192,500	154,000	84,000	54,000
	SM	UL	237,000	117,000	78,000	117,000	78,000	346,500	231,000	144,375	115,500	63,000	40,500
U	NS[i]	UL	35,500	19,000	8,500	14,000	8,500	54,000	36,000	22,500	18,000	9,000	5,500
	S1	UL	142,000	76,000	34,000	56,000	34,000	216,000	144,000	90,000	72,000	36,000	22,000
	SM	UL	106,500	57,000	25,500	42,000	25,500	162,000	108,000	67,500	54,000	27,000	16,500

For SI: 1 square foot = 0.0929 m^2.

UL = Unlimited; NP = Not Permitted; NS = Buildings not equipped throughout with an automatic sprinkler system; S1 = Buildings a maximum of one story above grade plane equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1; SM = Buildings two or more stories above grade plane equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1; S13R = Buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.2; S13D = Buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.3.

a. See Chapters 4 and 5 for specific exceptions to the allowable area in this chapter.

b. See Section 903.2 for the minimum thresholds for protection by an automatic sprinkler system for specific occupancies.

c. New Group H *and all Group L* occupancies are required to be protected by an automatic sprinkler system in accordance with Section 903.2.5.

d. The NS value is only for use in evaluation of existing building area in accordance with the *California Existing Building Code*.

e. New Group I-3 occupancies are required to be protected by an automatic sprinkler system in accordance with Section 903.2.6.

f. New and existing Group I-2 occupancies are required to be protected by an automatic sprinkler system in accordance with Section 903.2.6 and with Section 1103.5 of the *California Fire Code*.

g. New Group I-4 occupancies see Exceptions 2 and 3 of Section 903.2.6.

h. New Group R occupancies are required to be protected by an automatic sprinkler system in accordance with Section 903.2.8.

i. The maximum allowable area for a single-story nonsprinklered Group U greenhouse is permitted to be 9,000 square feet, or the allowable area shall be permitted to comply with Table C102.1 of Appendix C.

j. In other than Group A, E, H, I, L and R occupancies, high-rise buildings, and other applications listed in Section 1.11 regulated by the Office of the State Fire Marshal, the S increases for height and stories in Tables 504.3 and 504.4 are permitted in addition to the S area increase in accordance with Table 506.2.

k. For Group R-2 buildings of Type VA construction equipped throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.1, S area increase is permitted in addition to the height and story increase provided the height shall not exceed 60 feet and 4 stories.

l. The NS value is only for use in evaluation of single-occupancy, multistory buildings per the formula in Section 506.2.3.

506.2.1 Single-occupancy buildings. The allowable area of each story of a single-occupancy building shall be determined in accordance with Equation 5-1:

Equation 5-1 $A_a = A_t + (NS \times I_f)$

where:

A_a = Allowable area (square feet).

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A_t = Tabular allowable area factor (NS, S1, S13R or S13D value, as applicable) in accordance with Table 506.2.

NS = Tabular allowable area factor in accordance with Table 506.2 for nonsprinklered building (regardless of whether the building is sprinklered).

I_f = Area factor increase due to frontage (percent) as calculated in accordance with Section 506.3.

The allowable area per story of a single-occupancy building with a maximum of *two* stories above grade plane shall be determined by Equation 5-1. The total allowable area of a single-occupancy building more than *two* stories above grade plane shall be determined in accordance with Equation 5-2:

Equation 5-2 $A_a = [A_t + (NS \times I_f)] \times S_a$

where:

A_a = Allowable area (square feet).

A_t = Tabular allowable area factor (NS, S13R, S13D or SM value, as applicable) in accordance with Table 506.2.

NS = Tabular allowable area factor in accordance with Table 506.2 for a nonsprinklered building (regardless of whether the building is sprinklered).

I_f = Area factor increase due to frontage (percent) as calculated in accordance with Section 506.3.

S_a = 3 *for other than Group A, E, H, I, L and R occupancies, high-rise buildings, and other applications listed in Section 1.11 regulated by the Office of the State Fire Marshal,* where the actual number of stories above grade plane exceeds three.

S_a = 2 for Group A, E, H, I, L and R occupancies, high-rise buildings, and other applications listed in Section 1.11 regulated by the Office of the State Fire Marshal, actual number of building stories above grade plane, not to exceed two.

The actual area of any individual floor shall not exceed the allowable area per Equation 5-1.

506.2.2 Mixed-occupancy buildings. The allowable area of each story of a mixed-occupancy building shall be determined in accordance with the applicable provisions of Section 508.3.2 for nonseparated occupancies and Section 508.4.2 for separated occupancies.

For buildings with more than *two* stories above grade plane, the total building area shall be such that the aggregate sum of the ratios of the actual area of each story divided by the allowable area of such stories, determined in accordance with Equation 5-3 based on the applicable provisions of Section 508.1, shall not exceed three, *provided the aggregate sum of the ratios for portions of mixed-occupancy, multistory buildings containing A, E, H, I, L and R occupancies, high-rise buildings, and other applications listed in Section 1.11 regulated by the Office of the State Fire Marshal, including any other associated non-separated occupancies, shall not exceed two.*

Equation 5-3 $A_a = [A_t + (NS \times I_f)]$

where:

A_a = Allowable area (square feet).

A_t = Tabular allowable area factor (NS, S13R, S13D or SM value, as applicable) in accordance with Table 506.2.

NS = Tabular allowable area factor in accordance with Table 506.2 for a nonsprinklered building, regardless of whether the building is sprinklered.

I_f = Area factor increase due to frontage (percent) as calculated in accordance with Section 506.3.

506.2.2.1 Group H-2 or H-3 mixed occupancies. For a building containing Group H-2 or H-3 occupancies, the allowable area shall be determined in accordance with Section 508.4.2, with the automatic sprinkler system increase applicable only to the portions of the building not classified as Group H-2 or H-3.

506.3 Frontage increase. Every building shall adjoin or have access to a public way to receive an area factor increase based on frontage. Area factor increase shall be determined in accordance with Sections 506.3.1 through 506.3.3.

506.3.1 Minimum percentage of perimeter. To qualify for an area factor increase based on frontage, a building shall have not less than 25 percent of its perimeter on a public way or open space. Such open space shall be either on the same lot or dedicated for public use and shall be accessed from a street or approved fire lane.

506.3.2 Minimum frontage distance. To qualify for an area factor increase based on frontage, the public way or open space adjacent to the building perimeter shall have a minimum distance of 20 feet (6096 mm) measured at right angles from the building face to any of the following:

1. The closest interior lot line.
2. The entire width of a street, alley or public way.
3. The exterior face of an adjacent building on the same property.

The frontage increase shall be based on the smallest public way or open space that is 20 feet (6096 mm) or greater, and the percentage of building perimeter having a minimum 20 feet (6096 mm) public way or open space.

506.3.3 Amount of increase. The area factor increase based on frontage shall be determined in accordance with Table 506.3.3.

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TABLE 506.3.3—FRONTAGE INCREASE FACTOR[a]			
PERCENTAGE OF BUILDING PERIMETER	OPEN SPACE (feet)		
	20 to less than 25	25 to less than 30	30 or greater
0 to less than 25	0	0	0
25 to less than 50	0.17	0.21	0.25
50 to less than 75	0.33	0.42	0.50
75 to 100	0.50	0.63	0.75

For SI: 1 foot = 304.8 mm.
a. Interpolation is permitted.

506.3.3.1 Section 507 buildings. Where a building meets the requirements of Section 507, as applicable, except for compliance with the minimum 60-foot (18 288 mm) public way or yard requirement, the area factor increase based on frontage shall be determined in accordance with Table 506.3.3.1. The frontage increase shall be based on the smallest public way or open space that is 30 feet (9144 mm) or greater, and the percentage of building perimeter having a minimum 30 feet (9144 mm) public way or open space.

TABLE 506.3.3.1—SECTION 507 BUILDINGS[a]						
PERCENTAGE OF BUILDING PERIMETER	OPEN SPACE (feet)					
	30 to less than 35	35 to less than 40	40 to less than 45	45 to less than 50	50 to less than 55	55 or greater
0 to less than 25	0	0	0	0	0	0
25 to less than 50	0.29	0.33	0.38	0.42	0.46	0.50
50 to less than 75	0.58	0.67	0.75	0.83	0.92	1.00
75 to 100	0.88	1.00	1.13	1.25	1.38	1.50

For SI: 1 foot = 304.8 mm.
a. Interpolation is permitted.

SECTION 507—UNLIMITED AREA BUILDINGS

507.1 General. The area of buildings of the occupancies and configurations specified in Sections 507.1 through 507.13 shall not be limited. Basements not more than one story below grade plane shall be permitted.

507.1.1 Accessory occupancies. Accessory occupancies shall be permitted in unlimited area buildings in accordance with the provisions of Section 508.2, otherwise the requirements of Sections 507.3 through 507.13 shall be applied, where applicable.

507.2 Measurement of open spaces. Where Sections 507.3 through 507.13 require buildings to be surrounded and adjoined by public ways and yards, those open spaces shall be determined as follows:

1. Yards shall be measured from the building perimeter in all directions to the closest interior lot lines or to the exterior face of an opposing building located on the same lot, as applicable.
2. Where the building fronts on a public way, the entire width of the public way shall be used.

507.2.1 Reduced open space. The public ways or yards of 60 feet (18 288 mm) in width required in Sections 507.3, 507.4, 507.5, 507.6 and 507.12 shall be permitted to be reduced to not less than 40 feet (12 192 mm) in width, provided that the following requirements are met:

1. The reduced width shall not be allowed for more than 75 percent of the perimeter of the building.
2. The exterior walls facing the reduced width shall have a fire-resistance rating of not less than 3 hours.
3. Openings in the exterior walls facing the reduced width shall have opening protectives with a fire protection rating of not less than 3 hours.

507.3 Nonsprinklered, one-story buildings. The area of a Group F-2 or S-2 building of any construction type not more than one story above grade plane shall not be limited where the building is surrounded and adjoined by public ways or yards not less than 60 feet (18 288 mm) in width.

507.4 Sprinklered, one-story buildings. The area of a Group A-4 building not more than one story above grade plane of other than Type V construction, or the area of a Group B, F, M or S building no more than one story above grade plane of any construction type, shall not be limited where the building is provided with an automatic sprinkler system throughout in accordance with Section 903.3.1.1 and is surrounded and adjoined by public ways or yards not less than 60 feet (18 288 mm) in width.

Exceptions:

1. Buildings and structures of Type I or II construction for rack storage facilities that do not have access by the public shall not be limited in height, provided that such buildings conform to the requirements of Sections 507.4 and 903.3.1.1 and Chapter 32 of the *California Fire Code*.

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2. The automatic sprinkler system shall not be required in areas occupied for indoor participant sports, such as tennis, skating, swimming and equestrian activities in occupancies in Group A-4, provided that the following criteria are met:
   2.1. Exit doors directly to the outside are provided for occupants of the participant sports areas.
   2.2. The building is equipped with a fire alarm system with manual fire alarm boxes installed in accordance with Section 907.
   2.3. An automatic sprinkler system is provided in storage rooms, press boxes, concession booths or other spaces ancillary to the sport activity space.

507.4.1 Mixed occupancy buildings with Groups A-1 and A-2. Group A-1 and A-2 occupancies of other than Type V construction shall be permitted within mixed occupancy buildings of unlimited area complying with Section 507.4, provided that the following criteria are met:

1. Group A-1 and A-2 occupancies are separated from other occupancies as required for separated occupancies in Section 508.4.4 with no reduction allowed in the fire-resistance rating of the separation based upon the installation of an automatic sprinkler system.
2. Each area of the portions of the building used for Group A-1 or A-2 occupancies shall not exceed the maximum allowable area permitted for such occupancies in Section 503.1.
3. Exit doors from Group A-1 and A-2 occupancies shall discharge directly to the exterior of the building.

507.5 Two-story buildings. The area of a Group B, F, M or S building not more than two stories above grade plane shall not be limited where the building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 and is surrounded and adjoined by public ways or yards not less than 60 feet (18 288 mm) in width.

507.6 Group A-3 buildings of Type II construction. The area of a Group A-3 building not more than one story above grade plane, used as a place of religious worship, community hall, dance hall, exhibition hall, gymnasium, lecture hall, indoor swimming pool or tennis court of Type II construction, shall not be limited provided that the following criteria are met:

1. The building shall not have a stage other than a platform.
2. The building shall be equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.
3. The building shall be surrounded and adjoined by public ways or yards not less than 60 feet (18 288 mm) in width.

507.7 Group A-3 buildings of Type III and IV construction. The area of a Group A-3 building of Type III or IV construction, with not more than one story above grade plane and used as a place of religious worship, community hall, dance hall, exhibition hall, gymnasium, lecture hall, indoor swimming pool or tennis court, shall not be limited provided that the following criteria are met:

1. The building shall not have a stage other than a platform.
2. The building shall be equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.
3. The assembly floor shall be located 21 inches (533 mm) or less from street or grade level and all exits are provided with ramps complying with Section 1012 to the street or grade level.
4. The building shall be surrounded and adjoined by public ways or yards not less than 60 feet (18 288 mm) in width.

507.8 Group H-2, H-3 and H-4 occupancies. Group H-2, H-3 and H-4 occupancies shall be permitted in unlimited area buildings containing Group F or S occupancies in accordance with Sections 507.4 and 507.5 and the provisions of Sections 507.8.1 through 507.8.4.

507.8.1 Allowable area. The aggregate floor area of Group H occupancies located in an unlimited area building shall not exceed 10 percent of the area of the building or the area limitations for the Group H occupancies as specified in Section 506 based on the perimeter of each Group H floor area that fronts on a public way or open space.

507.8.1.1 Located within the building. The aggregate floor area of Group H occupancies not located at the perimeter of the building shall not exceed 25 percent of the area limitations for the Group H occupancies as specified in Section 506.

507.8.1.1.1 Rooms for flammable or combustible liquid use, dispensing or mixing in open systems. Rooms for flammable or combustible liquid use, dispensing or mixing in open systems having a floor area of not more than 500 square feet (46.5 m^2) need not be located on the outer perimeter of the building where they are in accordance with the *California Fire Code* and NFPA 30.

507.8.1.1.2 Liquid storage rooms and rooms for flammable or combustible liquid use in closed systems. Liquid storage rooms and rooms for flammable or combustible liquid use in closed systems having a floor area of not more than 1,000 square feet (93 m^2) need not be located on the outer perimeter where they are in accordance with the *California Fire Code* and NFPA 30.

507.8.1.1.3 Spray paint booths. Spray paint booths that comply with the *California Fire Code* need not be located on the outer perimeter.

507.8.2 Located on building perimeter. Except as provided for in Section 507.8.1.1, Group H occupancies shall be located on the perimeter of the building. In Group H-2 and H-3 occupancies, not less than 25 percent of the perimeter of such occupancies shall be an exterior wall.

507.8.3 Occupancy separations. Group H occupancies shall be separated from the remainder of the unlimited area building and from each other in accordance with Table 508.4.

507.8.4 Height limitations. For two-story, unlimited area buildings, Group H occupancies shall not be located more than one story above grade plane unless permitted based on the allowable height and number of stories and feet as specified in Section 504 based on the type of construction of the unlimited area building.

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507.9 Unlimited mixed occupancy buildings with Group H-5. The area of a Group B, F, H-5, M or S building not more than two stories above grade plane shall not be limited where the building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1, and is surrounded and adjoined by public ways or yards not less than 60 feet (18 288 mm) in width, provided that the following criteria are met:

1. Buildings containing Group H-5 occupancy shall be of Type I or II construction.
2. Each area used for Group H-5 occupancy shall be separated from other occupancies as required in Sections 415.11 and 508.4.
3. Each area used for Group H-5 occupancy shall not exceed the maximum allowable area permitted for such occupancies in Section 503.1 including modifications of Section 506.

   Exception: Where the Group H-5 occupancy exceeds the maximum allowable area, the Group H-5 shall be subdivided into areas that are separated by 2-hour fire barriers.

507.10 Aircraft paint hangar. The area of a Group H-2 aircraft paint hangar not more than one story above grade plane shall not be limited where such aircraft paint hangar complies with the provisions of Section 412.5 and is surrounded and adjoined by public ways or yards not less in width than one and one-half times the building height.

507.11 Group E buildings. The area of a Group E building not more than one story above grade plane, of Type II, IIIA or IV construction, shall not be limited provided that the following criteria are met:

1. Each classroom shall have not less than two means of egress, with one of the means of egress being a direct exit to the outside of the building complying with Section 1022.
2. The building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.
3. The building is surrounded and adjoined by public ways or yards not less than 60 feet (18 288 mm) in width.

507.12 Motion picture theaters. In buildings of Type II construction, the area of a motion picture theater located on the first story above grade plane shall not be limited where the building is provided with an automatic sprinkler system throughout in accordance with Section 903.3.1.1 and is surrounded and adjoined by public ways or yards not less than 60 feet (18 288 mm) in width.

507.13 Covered and open mall buildings and anchor buildings. The area of covered and open mall buildings and anchor buildings not exceeding three stories in height that comply with Section 402 shall not be limited.

SECTION 508—MIXED USE AND OCCUPANCY

508.1 General. Each portion of a building shall be individually classified in accordance with Section 302.1. Where a building contains more than one occupancy group, the building or portion thereof shall comply with the applicable provisions of Section 508.2, 508.3, 508.4 or 508.5, or a combination of these sections.

Exceptions:

1. Occupancies separated in accordance with Section 510.
2. Where required by Table 415.6.5, areas of Group H-1, H-2 and H-3 occupancies shall be located in a detached building or structure.

508.2 Accessory occupancies. Accessory occupancies are those occupancies that are ancillary to the main occupancy of the building or portion thereof. Accessory occupancies shall comply with the provisions of Sections 508.2.1 through 508.2.4.

508.2.1 Occupancy classification. Accessory occupancies shall be individually classified in accordance with Section 302.1. The requirements of this code shall apply to each portion of the building based on the occupancy classification of that space.

508.2.2 Allowable building height. The allowable height and number of stories of the building containing accessory occupancies shall be in accordance with Section 504 for the main occupancy of the building.

508.2.3 Allowable building area. The allowable area of the building shall be based on the applicable provisions of Section 506 for the main occupancy of the building. Aggregate accessory occupancies shall not occupy more than 10 percent of the floor area of the story in which they are located and shall not exceed the tabular values for nonsprinklered buildings in Table 506.2 for each such accessory occupancy.

508.2.4 Separation of occupancies. No separation is required between accessory occupancies and the main occupancy.

Exceptions:

1. Group H-2, H-3, H-4 and H-5 *and L* occupancies shall be separated from all other occupancies in accordance with Section 508.4.
2. Group R-1, R-2, *R-2.1, R-2.2* and R-3 dwelling units and sleeping units shall be separated from other dwelling or sleeping units and from accessory occupancies contiguous to them in accordance with the requirements of Section 420.
3. *Group I-2 shall be separated from all other occupancies in accordance with Section 508.4.*

   Exception: *No separation is required between Group B, E and R-1 sleeping units accessory to Group I-2 and covered exterior entrances required by Section 11B-206.4.10 or Section 1224.33.2.1 accessory to Group I-2.*
4. *Group I-3 shall be separated from all other occupancies in accordance with Section 508.4.*

508.3 Nonseparated occupancies. Buildings or portions of buildings that comply with the provisions of this section shall be considered as nonseparated occupancies.

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508.3.1 Occupancy classification. Nonseparated occupancies shall be individually classified in accordance with Section 302.1. The requirements of this code shall apply to each portion of the building based on the occupancy classification of that space. In addition, the most restrictive provisions of Chapter 9 that apply to the nonseparated occupancies shall apply to the total nonseparated occupancy area.

508.3.1.1 High-rise buildings. Where nonseparated occupancies occur in a high-rise building, the most restrictive requirements of Section 403 that apply to the nonseparated occupancies shall apply throughout the high-rise building.

➡ **508.3.2 Allowable building area, height and number of stories.** The allowable building area, height and number of stories of the building or portion thereof shall be based on the most restrictive allowances for the occupancy groups under consideration for the type of construction of the building in accordance with Section 503.1.

508.3.3 Separation. No separation is required between nonseparated occupancies.

Exceptions:

1. Group H-2, H-3, H-4 and H-5*, I-2 and L* occupancies shall be separated from all other occupancies in accordance with Section 508.4.
2. Group R-1, R-2, *R-2.1, R-2.2* and R-3 dwelling units and sleeping units shall be separated from other dwelling or sleeping units and from other occupancies contiguous to them in accordance with the requirements of Section 420.
3. *Where Group I-3 is not the main occupancy and the area is greater than 10 percent of the floor area, it shall be separated per Table 508.4.*

508.4 Separated occupancies. Buildings or portions of buildings that comply with the provisions of this section shall be considered as separated occupancies.

TABLE 508.4—REQUIRED SEPARATION OF OCCUPANCIES (HOURS)[f]

OCCUPANCY	A, E		I-4[i], *R-2.1*		I-2[j]		*I-3*		R-*1*[a], *R-2*[a], *R-2.2*[a], *R-3*[a], *R-3.1*[a], *R-4*[a]		F-2, S-2[b], U		B[e], F-1[g,h], M,S-1		*L*		H-1		H-2		H-3, H-4		H-5	
	S	NS	S	NS	S	NS	S	NS	S	NS	S	NS	S	NS	S	NS	S	NS	S	NS	S	NS	S	NS
A, E	N	N	1	2	2	NP	*2*	*NP*	1	2	N	1	1	2	*2*	*NP*	NP	NP	3	4	2	3	2	NP
I-4[i], *R-2.1*	1	2	N	N	2	NP	*2*	*NP*	1	NP	1	2	1	2	*2*	*NP*	NP	NP	*4*	NP	2	NP	*4*	NP
I-2[j]	2	NP	2	NP	N	N	*2*	*NP*	2	NP	2	NP	2	NP	*2*	*NP*	NP	NP	*4*	NP	2	NP	*4*	NP
I-3	*2*	*NP*	*2*	*NP*	*2*	*NP*	*N*	*NP*	*2*	*NP*	*2*	*2*	*2*	*2*	*2*	*NP*	*NP*	*NP*	*4*	*NP*	*4*	*NP*	*4*	*NP*
R-*1*[a], *R-2*[a], *R-2.2*[a], *R-3*[a], *R-3.1*[a], *R-4*[a]	1	2	1	NP	2	NP	*2*	*NP*	N	N	1[c]	2[c]	1	2	*4*	*NP*	NP	NP	3	NP	2	NP	2	NP
F-2, S-2[b], U	N	1	1	2	2	NP	*2*	*2*	1[c]	2[c]	N	N	1	2	*1*	*NP*	NP	NP	3	4	2	3	2	NP
B[e], F-1[g,h], M, S-1	1	2	1	2	2	NP	*2*	*2*	1	2	1	2	N	N	*1*	*NP*	NP	NP	2	3	1	2	1	NP
L	*2*	*NP*	*2*	*NP*	*2*	*NP*	*2*	*NP*	*4*	*NP*	*1*	*NP*	*1*	*NP*	*1*	*NP*	*NP*	*NP*	*2*	*NP*	*1*	*NP*	*1*	*NP*
H-1	NP	NP	NP	NP	NP	NP	*NP*	*NP*	NP	NP	NP	NP	NP	NP	*NP*	*NP*	N	NP	NP	NP	NP	NP	NP	NP
H-2	3	4	*4*	NP	*4*	NP	*4*	*NP*	3	4	3	4	2	3	*2*	*NP*	NP	NP	N	NP	1	NP	1	NP
H-3, H-4	2	3	*4*	NP	*4*	NP	*4*	*NP*	2	3	2	3	1	2	*1*	*NP*	NP	NP	1	NP	1[d]	NP	1	NP
H-5	2	NP	*4*	NP	*4*	NP	*4*	*NP*	2	NP	2	NP	1	NP	*1*	*NP*	NP	NP	1	NP	1	NP	N	NP

S = Buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1.
NS = Buildings not equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1.
N = No separation requirement.
NP = Not Permitted.

a. See Section 420.
b. The required separation from areas used only for private or pleasure vehicles shall be reduced by 1 hour but not to less than 1 hour.
c. See Sections 406.3.2 and 406.6.4.
d. Separation is not required between occupancies of the same classification.
e. See Section 422.2 for ambulatory care facilities.
f. Occupancy separations that serve to define fire area limits established in Chapter 9 for requiring fire protection systems shall also comply with Section 707.3.10 and Table 707.3.10 in accordance with Section 901.7.
g. ***[SFM]*** *Group I and F1 occupancies and Group R-2.1 and F-1 occupancies shall have a 3 hour separation.*
h. ***[SFM]*** *Commercial kitchens not associated with cafeterias and similar dining facilities in Group I-2 and Group R-2.1 shall have a 2-hour separation and shall be protected by an automatic sprinkler system.*
i. ***[SFM]*** *Group E child-care separation with I-4 child care can be reduced to 1 hour with the installation of automatic fire sprinklers in accordance with Section 903.3.1.1.*
j. *When not considered an accessory use in accordance with Section 508.2.4, the required separation between Group I-2 and required covers for accessible entrances and emergency vehicle entrances, when in accordance with Section 406.5.2 and protected by an automatic sprinkler system, shall be reduced by 1 hour but not to less than 1 hour. See Section 903.2.21.*

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508.4.1 Occupancy classification. Separated occupancies shall be individually classified in accordance with Section 302.1. Each separated space shall comply with this code based on the occupancy classification of that portion of the building. The most restrictive provisions of Chapter 9 that apply to the separate occupancies shall apply to the total nonfire-barrier-separated occupancy areas. Occupancy separations that serve to define fire area limits established in Chapter 9 for requiring a fire protection system shall also comply with Section 901.7.

508.4.2 Allowable building area. In each story, the building area shall be such that the sum of the ratios of the actual building area of each separated occupancy divided by the allowable building area of each separated occupancy shall not exceed 1.

508.4.3 Allowable building height and number of stories. Each separated occupancy shall comply with the building height limitations and story limitations based on the type of construction of the building in accordance with Section 503.1.

Exception: Special provisions of Section 510 shall permit occupancies at building heights and number of stories other than provided in Section 503.1.

508.4.4 Separation. Individual occupancies shall be separated from adjacent occupancies in accordance with Table 508.4.

508.4.4.1 Construction. Required separations shall be fire barriers constructed in accordance with Section 707 or horizontal assemblies constructed in accordance with Section 711, or both, so as to completely separate adjacent occupancies. Mass timber elements serving as fire barriers or horizontal assemblies to separate occupancies in Type IV-B or IV-C construction shall be separated from the interior of the building with an approved thermal barrier consisting of gypsum board that is not less than $^1/_2$ inch (12.7 mm) in thickness or a material that is tested in accordance with and meets the acceptance criteria of both the Temperature Transmission Fire Test and the Integrity Fire Test of NFPA 275.

Exception: A thermal barrier shall not be required on the top of horizontal assemblies serving as occupancy separations.

508.5 Live/work units. Live/work units shall comply with one of the following:

1. For a live/work unit located in a building constructed in accordance with this code, both the residential and nonresidential portions of the live/work unit shall comply with Sections 508.5 through 508.5.11.
2. For a live/work unit located in a building constructed in accordance with the *California Residential Code*, the nonresidential portion of the live/work unit shall comply with Sections 508.5.1 through 508.5.11, and the residential portion of the live/work unit shall be constructed in accordance with the *California Residential Code* and Section 508.5.7.

Exceptions:

1. Dwelling or sleeping units that include an office that is less than 10 percent of the area of the dwelling unit are permitted to be classified as dwelling units with accessory occupancies in accordance with Section 508.2.

2. Live/work units complying with the requirements of Section 508.5 shall be permitted to be constructed as one- and two-family dwellings or townhouses in accordance with the California Residential Code, as applicable.

508.5.1 Limitations. The following shall apply to live/work areas:

1. The live/work unit is permitted to be not greater than 3,000 square feet (279 m^2) in area.
2. The nonresidential area is permitted to be not more than 50 percent of the area of each live/work unit.
3. The nonresidential area function shall be limited to the first or main floor only of the live/work unit.

508.5.2 Occupancies. Live/work units shall be classified as a Group R-2 occupancy. Separation requirements found in Sections 420 and 508 shall not apply within the live/work unit where the live/work unit is in compliance with Section 508.5. Nonresidential uses that would otherwise be classified as either a Group H or S occupancy shall not be permitted in a live/work unit.

Exception: Storage shall be permitted in the live/work unit provided that the aggregate area of storage in the nonresidential portion of the live/work unit shall be limited to 10 percent of the space dedicated to nonresidential activities.

[BE] 508.5.3 Means of egress. Except as modified by this section, the means of egress components for a live/work unit shall be designed in accordance with Chapter 10 for the function served.

Exception: *Residential areas of live/work units constructed in accordance with the California Residential Code shall not be required to comply with Chapter 10.*

[BE] 508.5.4 Egress capacity. The egress capacity for each element of the live/work unit shall be based on the occupant load for the function served in accordance with Table 1004.5.

[BE] 508.5.5 Spiral stairways. Spiral stairways that conform to the requirements of Section 1011.10 shall be permitted.

[BE] 508.5.6 Vertical openings. Floor openings between floor levels of a live/work unit are permitted without enclosure.

[F] 508.5.7 Fire protection. Live/work units in buildings constructed in accordance with this code shall be provided with all of the following:

1. An automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2.
2. Smoke alarms in accordance with Section 907.2.11.
3. Where required by Section 907.2.9.1, a manual fire alarm system.

Live/work units in buildings constructed in accordance with the *California Residential Code* shall be provided with an automatic sprinkler system and smoke alarms. The automatic sprinkler system shall comply with *California Residential Code* Section *R309*, and smoke alarms shall comply with *California Residential Code* Section 310.

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508.5.8 Structural. Floors within a live/work unit shall be designed for the live loads in Table 1607.1, based on the function within the space.

Exception: *Residential areas of live/work units constructed in accordance with the California Residential Code shall not be required to comply with Table 1607.1.*

[BE] 508.5.9 Accessibility. Accessibility shall be designed in accordance with *Chapter 11A and/or 11B, when applicable,* for the function served.

508.5.10 Ventilation. The applicable ventilation requirements of the *California Mechanical Code* shall apply to each area within the live/work unit for the function within that space.

508.5.11 Plumbing facilities. The nonresidential area of the live/work unit shall be provided with minimum plumbing facilities as specified by the *California Plumbing Code*, based on the function of the nonresidential area. Where the nonresidential area of the live/work unit is required to be accessible, the plumbing fixtures specified by the *California Plumbing Code* shall be accessible.

SECTION 509—INCIDENTAL USES

509.1 General Incidental uses located within single occupancy or mixed occupancy buildings shall comply with the provisions of this section. Incidental uses are ancillary functions associated with a given occupancy that generally pose a greater level of risk to that occupancy and are limited to those uses specified in Table 509.1.

Exception: Incidental uses within and serving a dwelling unit are not required to comply with this section.

[F] TABLE 509.1—INCIDENTAL USES

ROOM OR AREA	SEPARATION AND/OR PROTECTION
Furnace room where any piece of equipment is over 400,000 Btu per hour input	1 hour or provide automatic sprinkler system
Rooms with boilers where the largest piece of equipment is over 15 psi and 10 horsepower	1 hour or provide automatic sprinkler system
Refrigerant machinery room	1 hour or provide automatic sprinkler system
Hydrogen fuel gas rooms, not classified as Group H	1 hour in Group B, F, M, S and U occupancies; 2 hours in Group A, E, I and R occupancies.
Incinerator rooms	2 hours and provide automatic sprinkler system
Paint shops, not classified as Group H, located in occupancies other than Group F	2 hours; or 1 hour and provide automatic sprinkler system
In Group E occupancies, laboratories and vocational shops not classified as Group H	1 hour or provide automatic sprinkler system
[SFM] *Rooms or areas with special hazards such as laboratories, vocational shops and other such areas not classified as Group H, located in Group E occupancies where hazardous materials in quantities not exceeding the maximum allowable quantity are used or stored.*	*1 hour*
In Group I-2 occupancies, laboratories not classified as Group H	1 hour[a]
In ambulatory care facilities, laboratories not classified as Group H	1 hour or provide automatic sprinkler system
Laundry rooms over 100 square feet	1 hour or provide automatic sprinkler system
In Group I-2, laundry rooms over 100 square feet	1 hour and provide automatic sprinkler system[a]
Group I-3 cells and Group I-2 patient rooms equipped with padded surfaces	1 hour and provide automatic sprinkler system[a]
In Group I-2, physical plant maintenance shops	1 hour and provide automatic sprinkler system[a]
In ambulatory care facilities or Group I-2 occupancies, waste and linen collection rooms with containers that have an aggregate volume of 8.67 cubic feet or greater	1 hour and provide automatic sprinkler system[a]
In other than ambulatory care facilities and Group I-2 occupancies, waste and linen collection rooms over 100 square feet	1 hour or provide automatic sprinkler system
In ambulatory care facilities or Group I-2 occupancies, storage rooms greater than 50 square feet	1 hour and provide automatic sprinkler system[a]
Electrical installations and transformers	See Sections 110.26 through 110.34 and Sections 450.8 through 450.48 of the *California Electrical Code* for protection and separation requirements.

For SI: 1 square foot = 0.0929 m^2, 1 pound per square inch (psi) = 6.9 kPa, 1 British thermal unit (Btu) per hour = 0.293 watts, 1 horsepower = 746 watts, 1 gallon = 3.785 L, 1 cubic foot = 0.0283 m^3.

*a. **[SFM]** Fire barrier protection and automatic sprinkler protection required throughout the fire area in I-2 occupancies as indicated.*

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509.2 Occupancy classification. Incidental uses shall not be individually classified in accordance with Section 302.1. Incidental uses shall be included in the building occupancies within which they are located.

509.3 Area limitations. Incidental uses shall not occupy more than 10 percent of the building area of the story in which they are located.

Exception: *Group E laboratories that are not classified as a Group H and are separated by a 1-hour fire barrier.*

509.4 Separation and protection. The incidental uses specified in Table 509.1 shall be separated from the remainder of the building or equipped with an automatic sprinkler system, or both, in accordance with the provisions of that table.

509.4.1 Separation. Where Table 509.1 specifies a fire-resistance-rated separation, the incidental uses shall be separated from the remainder of the building by a fire barrier constructed in accordance with Section 707 or a horizontal assembly constructed in accordance with Section 711, or both. Construction supporting 1-hour fire barriers or horizontal assemblies used for incidental use separations in buildings of Type IIB, IIIB and VB construction is not required to be fire-resistance rated unless required by other sections of this code.

509.4.1.1 Type IV-B and IV-C construction. Where Table 509.1 specifies a fire-resistance-rated separation, mass timber elements serving as fire barriers or horizontal assemblies in Type IV-B or IV-C construction shall be separated from the interior of the incidental use with an approved thermal barrier consisting of gypsum board that is not less than $^1/_2$ inch (12.7 mm) in thickness or a material that is tested in accordance with and meets the acceptance criteria of both the Temperature Transmission Fire Test and the Integrity Fire Test of NFPA 275.

Exception: The thermal barrier shall not be required on the top of horizontal assemblies serving as incidental use separations.

509.4.2 Protection. Where Table 509.1 permits an automatic sprinkler system without a fire barrier, the incidental uses shall be separated from the remainder of the building by construction capable of resisting the passage of smoke. The walls shall extend from the top of the foundation or floor assembly below to the underside of the ceiling that is a component of a fire-resistance-rated floor assembly or roof assembly above or to the underside of the floor or roof sheathing, deck or slab above. Doors shall be self- or automatic-closing upon detection of smoke in accordance with Section 716.2.6.6. Doors shall not have air transfer openings and shall not be undercut in excess of the clearance permitted in accordance with NFPA 80. Walls surrounding the incidental use shall not have air transfer openings unless provided with smoke dampers in accordance with Section 710.8.

509.4.2.1 Protection limitation. Where an automatic sprinkler system is provided in accordance with Table 509.1, only the space occupied by the incidental use need be equipped with such a system.

SECTION 510—SPECIAL PROVISIONS

510.1 General. The provisions in Sections 510.2 through 510.9 shall permit the use of special conditions that are exempt from, or modify, the specific requirements of this chapter regarding the allowable building heights and areas of buildings based on the occupancy classification and type of construction, provided the special condition complies with the provisions specified in this section for such condition and other applicable requirements of this code. The provisions of Sections 510.2 through 510.8 are to be considered independent and separate from each other.

510.2 Horizontal building separation allowance. A building shall be considered as separate and distinct buildings for the purpose of determining area limitations, continuity of fire walls, limitation of number of stories and type of construction where the following conditions are met:

1. The buildings are separated with a horizontal assembly having a fire-resistance rating of not less than 3 hours. Where a horizontal assembly contains vertical offsets, the vertical offset shall be constructed as a fire barrier in accordance with Section 707 and shall have a fire-resistance rating of not less than 3 hours.
2. The building below, including the horizontal assembly and any associated vertical offsets, is of Type IA construction.
3. Shaft, stairway, ramp and escalator enclosures through the horizontal assembly shall have not less than a 2-hour fire-resistance rating with opening protectives in accordance with Section 716.

   Exception: Where the enclosure walls below the horizontal assembly have not less than a 3-hour fire-resistance rating with opening protectives in accordance with Section 716, the enclosure walls extending above the horizontal assembly shall be permitted to have a 1-hour fire-resistance rating, provided that the following conditions are met:

   1. The building above the horizontal assembly is not required to be of Type I construction.
   2. The enclosure connects fewer than four stories.
   3. The enclosure opening protectives above the horizontal assembly have a fire protection rating of not less than 1 hour.
4. Interior exit stairways located within the Type IA building are permitted to be of combustible materials where the following requirements are met:
   4.1. The building above the Type IA building is of Type III, IV, or V construction.
   4.2. The stairway located in the Type IA building is enclosed by 3-hour fire-resistance-rated construction with opening protectives in accordance with Section 716.
5. The building or buildings above the horizontal assembly shall be Group A, B, M, R or S occupancies.

6. The building below the horizontal assembly shall be protected throughout by an approved automatic sprinkler system in accordance with Section 903.3.1.1, and shall be permitted to be any occupancy allowed by this code except Group H.
7. The maximum building height in feet (mm) shall not exceed the limits set forth in Section 504.3 for the building having the smaller allowable height as measured from the grade plane.

510.3 Group S-2 enclosed parking garage with Group S-2 open parking garage above. A Group S-2 enclosed parking garage with not more than one story above grade plane and located below a Group S-2 open parking garage shall be classified as a separate and distinct building for the purpose of determining the type of construction where the following conditions are met:

1. The allowable area of the building shall be such that the sum of the ratios of the actual area divided by the allowable area for each separate occupancy shall not exceed 1.
2. The Group S-2 enclosed parking garage is of Type I or II construction and is at least equal to the fire-resistance requirements of the Group S-2 open parking garage.
3. The height and the number of tiers of the Group S-2 open parking garage shall be limited as specified in Table 406.5.4.
4. The floor assembly separating the Group S-2 enclosed parking garage and Group S-2 open parking garage shall be protected as required for the floor assembly of the Group S-2 enclosed parking garage. Openings between the Group S-2 enclosed parking garage and Group S-2 open parking garage, except exit openings, shall not be required to be protected.
5. The Group S-2 enclosed parking garage is used exclusively for the parking or storage of private motor vehicles, but shall be permitted to contain an office, waiting room and toilet room having a total area of not more than 1,000 square feet (93 m^2) and mechanical equipment rooms associated with the operation of the building.

510.4 Parking beneath Group R. Where a maximum one story above grade plane Group S-2 parking garage, enclosed or open, or combination thereof, of Type I construction or open of Type IV construction, with grade entrance, is provided under a building of Group R, the number of stories to be used in determining the minimum type of construction shall be measured from the floor above such a parking area. The floor assembly between the parking garage and the Group R above shall comply with the type of construction required for the parking garage and shall also provide a fire-resistance rating not less than the mixed occupancy separation required in Section 508.4.

510.5 Group R-1 and R-2 buildings of Type IIIA construction. For buildings of Type IIIA construction in Groups R-1 and R-2, the maximum allowable height in Table 504.3 shall be increased by 10 feet (3048 mm) and the maximum allowable number of stories in Table 504.4 shall be increased by one where the first-floor assembly above the basement has a fire-resistance rating of not less than 3 hours and the floor area is subdivided by 2-hour fire-resistance-rated fire walls into areas of not more than 3,000 square feet (279 m^2).

510.6 Group R-1 and R-2 buildings of Type IIA construction. The height limitation for buildings of Type IIA construction in Groups R-1 and R-2 shall be increased to nine stories and 100 feet (30 480 mm) where the building is separated by not less than 50 feet (15 240 mm) from any other building on the lot and from lot lines, the exits are segregated in an area enclosed by a 2-hour fire-resistance-rated fire wall and the first floor assembly has a fire-resistance rating of not less than $1^1/_2$ hours.

510.7 Open parking garage beneath Groups A, I, B, M and R. Open parking garages constructed under Groups A, I, B, M and R shall not exceed the height and area limitations permitted under Section 406.5. The height and area of the portion of the building above the open parking garage shall not exceed the limitations in Section 503 for the upper occupancy. The height, in both feet and stories, of the portion of the building above the open parking garage shall be measured from grade plane and shall include both the open parking garage and the portion of the building above the parking garage.

510.7.1 Fire separation. Fire barriers constructed in accordance with Section 707 or horizontal assemblies constructed in accordance with Section 711 between the parking occupancy and the upper occupancy shall correspond to the required fire-resistance rating prescribed in Table 508.4 for the uses involved. The type of construction shall apply to each occupancy individually, except that structural members, including main bracing within the open parking structure, which is necessary to support the upper occupancy, shall be protected with the more restrictive fire-resistance-rated assemblies of the groups involved as shown in Table 601. Means of egress for the upper occupancy shall conform to Chapter 10 and shall be separated from the parking occupancy by fire barriers having not less than a 2-hour fire-resistance rating as required by Section 707 with self-closing doors complying with Section 716 or horizontal assemblies having not less than a 2-hour fire-resistance rating as required by Section 711, with self-closing doors complying with Section 716. Means of egress from the open parking garage shall comply with Section 406.5.

510.8 Group B or M buildings with Group S-2 open parking garage above. Group B or M occupancies located below a Group S-2 open parking garage of a lesser type of construction shall be considered as a separate and distinct building from the Group S-2 open parking garage for the purpose of determining the type of construction where the following conditions are met:

1. The buildings are separated with a horizontal assembly having a fire-resistance rating of not less than 2 hours.
2. The occupancies in the building below the horizontal assembly are limited to Groups B and M.
3. The occupancy above the horizontal assembly is limited to a Group S-2 open parking garage.
4. The building below the horizontal assembly is of Type IA construction.

   Exception: The building below the horizontal assembly shall be permitted to be of Type IB or II construction, but not less than the type of construction required for the Group S-2 open parking garage above, where the building below is not greater than one story in height above grade plane.
5. The height and area of the building below the horizontal assembly does not exceed the limits set forth in Section 503.

6. The height and area of the Group S-2 open parking garage does not exceed the limits set forth in Section 406.5. The height, in both feet and stories, of the Group S-2 open parking garage shall be measured from grade plane and shall include the building below the horizontal assembly.
7. Exits serving the Group S-2 open parking garage shall discharge at grade with direct and unobstructed access to a street or public way and are separated from the building below the horizontal assembly by 2-hour fire barriers constructed in accordance with Section 707 or 2-hour horizontal assemblies constructed in accordance with Section 711, or both.

510.9 Multiple buildings above a horizontal assembly. Where two or more buildings are provided above the horizontal assembly separating a Group S-2 parking garage or building below from the buildings above in accordance with the special provisions in Section 510.2, 510.3 or 510.8, the buildings above the horizontal assembly shall be regarded as separate and distinct buildings from each other and shall comply with all other provisions of this code as applicable to each separate and distinct building.

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CALIFORNIA BUILDING CODE – MATRIX ADOPTION TABLE
CHAPTER 6 – TYPES OF CONSTRUCTION

(Matrix Adoption Tables are nonregulatory, intended only as an aid to the code user.
See Chapter 1 for state agency authority and building applications.)

Adopting agency	BSC	BSC-CG	SFM	HCD			DSA			OSHPD							BSCC	DPH	AGR	DWR	CEC	CA	SL	SLC
				1	2	1/AC	AC	SS	SS/CC	1	1R	2	3	4	5	6								
Adopt entire chapter	X							X	X	X	X	X	X	X	X	X								
Adopt entire chapter as amended (amended sections listed below)			X	X	X																			
Adopt only those sections that are listed below																								
Chapter / Section																								
Table 601			X																					
602.1			X																					
602.4.1.5				X	X																			
602.4.2.5				X	X																			
602.4.3.5				X	X																			
602.4.4.3				X	X																			
603.1				X	X																			
603.1.3				X	X																			

The state agency does not adopt sections identified with the following symbol: †

The Office of the State Fire Marshal's adoption of this chapter or individual sections is applicable to structures regulated by other state agencies pursuant to Section 1.11.

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CHAPTER

6 TYPES OF CONSTRUCTION

User notes:

About this chapter: Chapter 6 establishes five types of construction in which each building must be categorized. This chapter looks at the materials used in the building (combustible or noncombustible) and the extent to which building elements such as the building frame, roof, wall and floor can resist fire. Depending on the type of construction and the specific building element, fire resistance of 1 to 3 hours is specified.

ICC code development note: Code change proposals to sections in this chapter will be considered by one of the code development committees meeting during the 2025 (Group B) Code Development Cycle.

SECTION 601—GENERAL

TABLE 601—FIRE-RESISTANCE RATING REQUIREMENTS FOR BUILDING ELEMENTS (HOURS)

BUILDING ELEMENT	TYPE I		TYPE II		TYPE III		TYPE IV				TYPE V	
	A	B	A	B	A	B	A	B	C	HT	A	B
Primary structural frame[f] (see Section 202)	3[a, b]	2[a, b, c]	1[b, c]	0[c]	1[b, c]	0	3[a]	2[a]	2[a]	HT	1[b, c]	0
Bearing walls												
Exterior[e, f]	3	2	1	0	2	2	3	2	2	2	1	0
Interior	3[a]	2[a]	1	0	1	0	3	2	2	1/HT[g]	1	0
Nonbearing walls and partitions Exterior	See Table 705.5											
Nonbearing walls and partitions Interior[d]	0	0	0	0	0	0	0	0	0	See Section 2304.11.2	0	0
Floor construction and associated secondary structural members (see Section 202)	2	2	1	0	1	0	2	2	2	HT	1	0
Roof construction and associated secondary structural members (see Section 202)	$1^1/_2$[b]	1[b, c]	1[b, c]	0[c]	1[b, c]	0	$1^1/_2$	1	1	HT	1[b, c]	0

For SI: 1 foot = 304.8 mm.

a. Roof supports: Fire-resistance ratings of primary structural frame and bearing walls are permitted to be reduced by 1 hour where supporting a roof only.

b. *1.* Except in Group *A, E,* F-1, H, *I, L,* M, *R-1, R-2, R-2.1* and S-1 occupancies, *high-rise buildings, and other applications listed in Section 1.11 regulated by the Office of the State Fire Marshal,* fire protection of structural members in roof construction shall not be required, including protection of primary structural frame members, roof framing and decking where every part of the roof construction is 20 feet or more above any floor or mezzanine immediately below. Fire-retardant-treated wood members shall be allowed to be used for such unprotected members.

2. For Group A, E, I, L, R-1, R-2 and R-2.1 occupancies, high-rise buildings, and other applications listed in Section 1.11 regulated by the Office of the State Fire Marshal, fire protection of members other than the primary structural frame shall not be required, including protection of roof framing and decking where every part of the roof construction is 20 feet or more above any floor immediately below. Fire-retardant-treated wood members shall be allowed to be used for such unprotected members.

3. One-story portions of Group A and E assembly occupancies the roof-framing system of Type II A or Type III A construction may be of unprotected construction when such roof-framing system is open to the assembly area and does not contain concealed spaces.

c. In all occupancies, heavy timber complying with Section 2304.11 shall be allowed for roof construction, including primary structural frame members, where a 1-hour or less fire-resistance rating is required.

d. Not less than the fire-resistance rating required by other sections of this code.

e. Not less than the fire-resistance rating based on fire separation distance (see Table 705.5).

f. Not less than the fire-resistance rating as referenced in Section 704.9.

g. Heavy timber bearing walls supporting more than two floors or more than a floor and a roof shall have a fire-resistance rating of not less than 1 hour.

601.1 Scope. The provisions of this chapter shall control the classification of buildings as to type of construction.

SECTION 602—CONSTRUCTION CLASSIFICATION

602.1 General. Buildings and structures erected or to be erected, altered or extended in height or area shall be classified in one of the five construction types defined in Sections 602.2 through 602.5. The building elements shall have a fire-resistance rating not less than that specified in Table 601 and exterior walls shall have a fire-resistance rating not less than that specified in Table 705.5. Where required to have a fire-resistance rating by Table 601, building elements shall comply with the applicable provisions of Section 703.2.

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The protection of openings, ducts and air transfer openings in building elements shall not be required unless required by other provisions of this code.

Exception: *Noncombustible structural members supporting solar photovoltaic panels are not required to meet the fire resistance rating for the following:*

1. *Photovoltaic panel supported by a structure and having no use underneath. Signs may be provided, as determined by the enforcing agency prohibiting any use underneath including storage.*
2. *Solar photovoltaic (PV) panels supported by noncombustible framing that have sufficient uniformly distributed and unobstructed openings throughout the top of the array (horizontal plane) to allow heat and gases to escape, as determined by the enforcing agency.*
3. *Solar photovoltaic panels supported by a structure over parking stalls where the panels constitute the roof and all the following conditions are met (see Figure 5-1):*
    - *3.1. The area within the perimeter of the solar photovoltaic array has maximum rectangular dimension of 40 feet by 150 feet.*
    - *3.2. The distance between solar photovoltaic array structures is a minimum of 10 feet clear.*
    - *3.3. The driveway aisle separating solar photovoltaic array structures has a minimum width of 25 feet clear.*
    - *3.4. Solar photovoltaic array structure is used only for parking purposes with no storage.*
    - *3.5. Completely open on all sides (other than necessary structural supports) with no interior partitions.*

602.1.1 Minimum requirements. A building or portion thereof shall not be required to conform to the details of a type of construction higher than that type which meets the minimum requirements based on occupancy even though certain features of such a building actually conform to a higher type of construction.

602.2 Types I and II. Types I and II construction are those types of construction in which the building elements specified in Table 601 are of noncombustible materials, except as permitted in Section 603 and elsewhere in this code.

602.3 Type III. Type III construction is that type of construction in which the exterior walls are of noncombustible materials and the interior building elements are of any material permitted by this code. Fire-retardant-treated wood framing and sheathing complying with Section 2303.2 shall be permitted within exterior wall assemblies of a 2-hour rating or less.

602.4 Type IV. Type IV construction is that type of construction in which the building elements are mass timber or noncombustible materials and have fire-resistance ratings in accordance with Table 601. Mass timber elements shall meet the fire-resistance-rating requirements of this section based on either the fire-resistance rating of the noncombustible protection, the mass timber, or a combination of both and shall be determined in accordance with Section 703.2. The minimum dimensions and permitted materials for building elements shall comply with the provisions of this section and Section 2304.11. Mass timber elements of Types IV-A, IV-B and IV-C construction shall be protected with noncombustible protection applied directly to the mass timber in accordance with Sections 602.4.1 through 602.4.3. The time assigned to the noncombustible protection shall be determined in accordance with Section 703.6 and comply with Section 722.7.

Cross-laminated timber shall be labeled as conforming to ANSI/APA PRG 320 as referenced in Section 2303.1.4.

Exterior load-bearing walls and nonload-bearing walls shall be mass timber construction, or shall be of noncombustible construction.

Exception: Exterior load-bearing walls and nonload-bearing walls of Type IV-HT Construction in accordance with Section 602.4.4.

The interior building elements, including nonload-bearing walls and partitions, shall be of mass timber construction or of noncombustible construction.

Exception: Interior building elements and nonload-bearing walls and partitions of Type IV-HT construction in accordance with Section 602.4.4.

Combustible concealed spaces are not permitted except as otherwise indicated in Sections 602.4.1 through 602.4.4. Combustible stud spaces within light frame walls of Type IV-HT construction shall not be considered concealed spaces, but shall comply with Section 718.

In buildings of Type IV-A, IV-B, and IV-C construction with an occupied floor located more than 75 feet (22 860 mm) above the lowest level of fire department vehicle access, up to and including 12 stories or 180 feet (54 864 mm) above grade plane, mass timber interior exit and elevator hoistway enclosures shall be protected in accordance with Section 602.4.1.2. In buildings greater than 12 stories or 180 feet (54 864 mm) above grade plane, interior exit and elevator hoistway enclosures shall be constructed of noncombustible materials.

602.4.1 Type IV-A. Building elements in Type IV-A construction shall be protected in accordance with Sections 602.4.1.1 through 602.4.1.6. The required fire-resistance rating of noncombustible elements and protected mass timber elements shall be determined in accordance with Section 703.2.

602.4.1.1 Exterior protection. The outside face of exterior walls of mass timber construction shall be protected with noncombustible protection with a minimum assigned time of 40 minutes, as specified in Table 722.7.1(1). Components of the exterior wall covering shall be of noncombustible material except water-resistive barriers having a peak heat release rate of less than 150kW/m^2, a total heat release of less than 20 MJ/m^2 and an effective heat of combustion of less than 18MJ/kg as determined in accordance with ASTM E1354 and having a flame spread index of 25 or less and a smoke-developed index of 450 or less as

determined in accordance with ASTM E84 or UL 723. The ASTM E1354 test shall be conducted on specimens at the thickness intended for use, in the horizontal orientation and at an incident radiant heat flux of 50 kW/m^2.

602.4.1.2 Interior protection. Interior faces of all mass timber elements, including the inside faces of exterior mass timber walls and mass timber roofs, shall be protected with materials complying with Section 703.3.

602.4.1.2.1 Protection time. Noncombustible protection shall contribute a time equal to or greater than times assigned in Table 722.7.1(1), but not less than 80 minutes. The use of materials and their respective protection contributions specified in Table 722.7.1(2) shall be permitted to be used for compliance with Section 722.7.1.

602.4.1.3 Floors. The floor assembly shall contain a noncombustible material not less than 1 inch (25 mm) in thickness above the mass timber. Floor finishes in accordance with Section 804 shall be permitted on top of the noncombustible material. The underside of floor assemblies shall be protected in accordance with Section 602.4.1.2.

602.4.1.4 Roofs. The interior surfaces of roof assemblies shall be protected in accordance with Section 602.4.1.2. Roof coverings in accordance with Chapter 15 shall be permitted on the outside surface of the roof assembly.

602.4.1.5 Concealed spaces. Concealed spaces shall not contain combustibles other than electrical, mechanical, fire protection, or plumbing materials and equipment permitted in plenums in accordance with the *California Mechanical Code*, and shall comply with all applicable provisions of Section 718. Combustible construction forming concealed spaces shall be protected in accordance with Section 602.4.1.2. <

602.4.1.6 Shafts. Shafts shall be permitted in accordance with Sections 713 and 718. Both the shaft side and room side of mass timber elements shall be protected in accordance with Section 602.4.1.2.

602.4.2 Type IV-B. Building elements in Type IV-B construction shall be protected in accordance with Sections 602.4.2.1 through 602.4.2.6. The required fire-resistance rating of noncombustible elements or mass timber elements shall be determined in accordance with Section 703.2.

602.4.2.1 Exterior protection. The outside face of exterior walls of mass timber construction shall be protected with noncombustible protection with a minimum assigned time of 40 minutes, as specified in Table 722.7.1(1). Components of the exterior wall covering shall be of noncombustible material except water-resistive barriers having a peak heat release rate of less than 150kW/m^2, a total heat release of less than 20 MJ/m^2 and an effective heat of combustion of less than 18MJ/kg as determined in accordance with ASTM E1354, and having a flame spread index of 25 or less and a smoke-developed index of 450 or less as determined in accordance with ASTM E84 or UL 723. The ASTM E1354 test shall be conducted on specimens at the thickness intended for use, in the horizontal orientation and at an incident radiant heat flux of 50 kW/m^2.

602.4.2.2 Interior protection. Interior faces of all mass timber elements, including the inside face of exterior mass timber walls and mass timber roofs, shall be protected, as required by this section, with materials complying with Section 703.3.

602.4.2.2.1 Protection time. Noncombustible protection shall contribute a time equal to or greater than times assigned in Table 722.7.1(1), but not less than 80 minutes. The use of materials and their respective protection contributions specified in Table 722.7.1(2) shall be permitted to be used for compliance with Section 722.7.1.

602.4.2.2.2 Protected area. Interior faces of mass timber elements, including the inside face of exterior mass timber walls and mass timber roofs, shall be protected in accordance with Section 602.4.2.2.1.

Exceptions: Unprotected portions of mass timber ceilings and walls complying with Section 602.4.2.2.4 and the following:

1. Unprotected portions of mass timber ceilings and walls complying with one of the following:
   1.1. Unprotected portions of mass timber ceilings, including attached beams, limited to an area less than or equal to 100 percent of the floor area in any dwelling unit within a story or fire area within a story.
   1.2. Unprotected portions of mass timber walls, including attached columns, limited to an area less than or equal to 40 percent of the floor area in any dwelling unit within a story or fire area within a story.
   1.3. Unprotected portions of both walls and ceilings of mass timber, including attached columns and beams, in any dwelling unit or fire area and in compliance with Section 602.4.2.2.3.
2. Mass timber columns and beams that are not an integral portion of walls or ceilings, respectively, without restriction of either aggregate area or separation from one another.

602.4.2.2.3 Mixed unprotected areas. In each dwelling unit or fire area, where both portions of ceilings and portions of walls are unprotected, the total allowable unprotected area shall be determined in accordance with Equation 6-1.

Equation 6-1 $(U_{tc}/U_{ac}) + (U_{tw}/U_{aw}) \leq 1$

where:

U_{tc} = Total unprotected mass timber ceiling areas.

U_{ac} = Allowable unprotected mass timber ceiling area conforming to Exception 1.1 of Section 602.4.2.2.2.

U_{tw} = Total unprotected mass timber wall areas.

U_{aw}= Allowable unprotected mass timber wall area conforming to Exception 1.2 of Section 602.4.2.2.2.

602.4.2.2.4 Separation distance between unprotected mass timber elements. In each dwelling unit or fire area, unprotected portions of mass timber walls shall be not less than 15 feet (4572 mm) from unprotected portions of other walls measured horizontally along the floor.

602.4.2.3 Floors. The floor assembly shall contain a noncombustible material not less than 1 inch (25 mm) in thickness above the mass timber. Floor finishes in accordance with Section 804 shall be permitted on top of the noncombustible material. Except where unprotected mass timber ceilings are permitted in Section 602.4.2.2.2, the underside of floor assemblies shall be protected in accordance with Section 602.4.1.2.

602.4.2.4 Roofs. The interior surfaces of roof assemblies shall be protected in accordance with Section 602.4.2.2 except, in nonoccupiable spaces, they shall be treated as a concealed space with no portion left unprotected. Roof coverings in accordance with Chapter 15 shall be permitted on the outside surface of the roof assembly.

602.4.2.5 Concealed spaces. Concealed spaces shall not contain combustibles other than electrical, mechanical, fire protection, or plumbing materials and equipment permitted in plenums in accordance with the *California Mechanical Code*, and shall comply with all applicable provisions of Section 718. Combustible construction forming concealed spaces shall be protected in accordance with Section 602.4.1.2.

602.4.2.6 Shafts. Shafts shall be permitted in accordance with Sections 713 and 718. Both the shaft side and room side of mass timber elements shall be protected in accordance with Section 602.4.1.2.

602.4.3 Type IV-C. Building elements in Type IV-C construction shall be protected in accordance with Sections 602.4.3.1 through 602.4.3.6. The required fire-resistance rating of building elements shall be determined in accordance with Section 703.2.

602.4.3.1 Exterior protection. The exterior side of walls of combustible construction shall be protected with noncombustible protection with a minimum assigned time of 40 minutes, as determined in Table 722.7.1(1). Components of the exterior wall covering shall be of noncombustible material except water-resistive barriers having a peak heat release rate of less than 150 kW/m^2, a total heat release of less than 20 MJ/m^2 and an effective heat of combustion of less than 18 MJ/kg as determined in accordance with ASTM E1354 and having a flame spread index of 25 or less and a smoke-developed index of 450 or less as determined in accordance with ASTM E84 or UL 723. The ASTM E1354 test shall be conducted on specimens at the thickness intended for use, in the horizontal orientation and at an incident radiant heat flux of 50 kW/m^2.

602.4.3.2 Interior protection. Mass timber elements are permitted to be unprotected.

602.4.3.3 Floors. Floor finishes in accordance with Section 804 shall be permitted on top of the floor construction.

602.4.3.4 Roof coverings. Roof coverings in accordance with Chapter 15 shall be permitted on the outside surface of the roof assembly.

602.4.3.5 Concealed spaces. Concealed spaces shall not contain combustibles other than electrical, mechanical, fire protection, or plumbing materials and equipment permitted in plenums in accordance with the *California Mechanical Code*, and shall comply with all applicable provisions of Section 718. Combustible construction forming concealed spaces shall be protected with noncombustible protection with a minimum assigned time of 40 minutes, as specified in Table 722.7.1(1).

602.4.3.6 Shafts. Shafts shall be permitted in accordance with Sections 713 and 718. Shafts and elevator hoistway and interior exit stairway enclosures shall be protected with noncombustible protection with a minimum assigned time of 40 minutes, as specified in Table 722.7.1(1), on both the inside of the shaft and the outside of the shaft.

602.4.4 Type IV-HT. Type IV-HT (Heavy Timber) construction is that type of construction in which the exterior walls are of noncombustible materials and the interior building elements are of solid wood, laminated heavy timber or structural composite lumber (SCL), without concealed spaces or with concealed spaces complying with Section 602.4.4.3. The minimum dimensions for permitted materials including solid timber, glued-laminated timber, SCL and cross-laminated timber (CLT) and the details of Type IV construction shall comply with the provisions of this section and Section 2304.11. Exterior walls complying with Section 602.4.4.1 or 602.4.4.2 shall be permitted. Interior walls and partitions not less than 1-hour fire-resistance rated or heavy timber conforming with Section 2304.11.2.2 shall be permitted.

602.4.4.1 Fire-retardant-treated wood in exterior walls. Fire-retardant-treated wood framing and sheathing complying with Section 2303.2 shall be permitted within exterior wall assemblies with a 2-hour rating or less.

602.4.4.2 Cross-laminated timber in exterior walls. Cross-laminated timber (CLT) not less than 4 inches (102 mm) in thickness complying with Section 2303.1.4 shall be permitted within exterior wall assemblies with a 2-hour rating or less. Heavy timber structural members appurtenant to the CLT exterior wall shall meet the requirements of Table 2304.11 and be fire-resistance rated as required for the exterior wall. The exterior surface of the cross-laminated timber and heavy timber elements shall be protected by one of the following:

1. Fire-retardant-treated wood sheathing complying with Section 2303.2 and not less than $^{15}/_{32}$ inch (12 mm) thick.
2. Gypsum board not less than $^{1}/_{2}$ inch (12.7 mm) thick.
3. A noncombustible material.

602.4.4.3 Concealed spaces. Concealed spaces shall not contain combustible materials other than building elements and electrical, mechanical, fire protection, or plumbing materials and equipment permitted in plenums in accordance with the *California Mechanical Code*. Concealed spaces shall comply with applicable provisions of Section 718. Concealed spaces shall be protected in accordance with one or more of the following:

1. The building shall be sprinklered throughout in accordance with Section 903.3.1.1 and automatic sprinklers shall also be provided in the concealed space.
2. The concealed space shall be completely filled with noncombustible insulation.

3. Combustible surfaces within the concealed space shall be fully sheathed with not less than $^5/_8$-inch Type X gypsum board.

Exception: Concealed spaces within interior walls and partitions with a 1-hour or greater fire-resistance rating complying with Section 2304.11.2.2 shall not require additional protection.

602.4.4.4 Exterior structural members. Where a fire separation distance of 20 feet (6096 mm) or more is provided, wood columns and arches conforming to heavy timber sizes complying with Section 2304.11 shall be permitted to be used externally.

602.5 Type V. Type V construction is that type of construction in which the structural elements, exterior walls and interior walls are of any materials permitted by this code.

SECTION 603—COMBUSTIBLE MATERIAL IN TYPES I AND II CONSTRUCTION

603.1 Allowable materials. Combustible materials shall be permitted in buildings of Type I or II construction in the following applications and in accordance with Sections 603.1.1 through 603.1.3:

1. Fire-retardant-treated wood complying with Section 2303.2 shall be permitted in:
   - 1.1. Nonbearing partitions where the required fire-resistance rating is 2 hours or less except in shaft enclosures within Group I-2 occupancies and ambulatory care facilities.
   - 1.2. Nonbearing exterior walls where fire-resistance-rated construction is not required.
   - 1.3. Roof construction, including girders, trusses, framing and decking.

     Exceptions:
     1. In buildings of Type IA construction exceeding two stories above grade plane, fire-retardant-treated wood is not permitted in roof construction where the vertical distance from the upper floor to the roof is less than 20 feet (6096 mm).
     2. Group I-2, roof construction containing fire-retardant-treated wood shall be covered by not less than a Class A roof covering or roof assembly, and the roof assembly shall have a fire-resistance rating where required by the construction type.
   - 1.4. Balconies, porches, decks and exterior stairways not used as required exits on buildings three stories or less above grade plane.
2. Thermal and acoustical insulation, other than foam plastics, having a flame spread index of not more than 25.

   Exceptions:
   1. Insulation placed between two layers of noncombustible materials without an intervening airspace shall be allowed to have a flame spread index of not more than 100.
   2. Insulation installed between a finished floor and solid decking without intervening airspace shall be allowed to have a flame spread index of not more than 200.
3. Foam plastics in accordance with Chapter 26.
4. Roof coverings that have an A, B or C classification.
5. Interior floor finish and floor covering materials installed in accordance with Section 804.
6. Millwork such as doors, door frames, window sashes and frames.
7. Interior wall and ceiling finishes installed in accordance with Section 803.
8. Trim installed in accordance with Section 806.6.
9. Where not installed greater than 15 feet (4572 mm) above grade, show windows, nailing or furring strips and wooden bulkheads below show windows, including their frames, aprons and show cases.
10. Finish flooring installed in accordance with Section 805.
11. Partitions dividing portions of stores, offices or similar places occupied by one tenant only and that do not establish a corridor serving an occupant load of 30 or more shall be permitted to be constructed of fire-retardant-treated wood complying with Section 2303.2, 1-hour fire-resistance-rated construction or of wood panels or similar light construction up to 6 feet (1829 mm) in height.
12. Stages and platforms constructed in accordance with Sections 410.2 and 410.3, respectively.
13. Combustible exterior wall coverings, balconies and similar projections and bay or oriel windows in accordance with Chapter 14 and Section 705.2.3.1.
14. Blocking such as for handrails, millwork, cabinets and window and door frames.
15. Light-transmitting plastics as permitted by Chapter 26.
16. Mastics and caulking materials applied to provide flexible seals between components of exterior wall construction.
17. Exterior plastic veneer installed in accordance with Section 2605.2.
18. Nailing or furring strips as permitted by Section 803.15.
19. Heavy timber as permitted by Note c to Table 601 and Sections 602.4.4.4 and 705.2.3.1.
20. Aggregates, component materials and admixtures as permitted by Section 703.2.1.2.
21. Sprayed fire-resistive materials and intumescent fire-resistive materials, determined on the basis of fire resistance tests in accordance with Section 703.2 and installed in accordance with Sections 1705.15 and 1705.16, respectively.

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22. Materials used to protect penetrations in fire-resistance-rated assemblies in accordance with Section 714.
23. Materials used to protect joints in fire-resistance-rated assemblies in accordance with Section 715.
24. Materials allowed in the concealed spaces of buildings of Types I and II construction in accordance with Section 718.5.
25. Materials exposed within plenums complying with the *California Mechanical Code*.
26. Wall construction of freezers and coolers of less than 1,000 square feet (92.9 m^2), in size, lined on both sides with noncombustible materials and the building is protected throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.
27. Wood nailers for parapet flashing and roof cants.
28. Vapor retarders as required by Section 1404.3.

603.1.1 Ducts. The use of nonmetallic ducts shall be permitted where installed in accordance with the limitations of the *California Mechanical Code*.

603.1.2 Piping and plumbing fixtures. The use of combustible piping materials and plumbing fixtures shall be permitted where installed in accordance with the limitations of the *California Mechanical Code* and the *California Plumbing Code*.

603.1.3 Electrical. The use of electrical wiring methods with combustible insulation, tubing, raceways and related components shall be permitted where installed in accordance with the limitations of this code *and the California Electrical Code.*

CALIFORNIA BUILDING CODE – MATRIX ADOPTION TABLE
CHAPTER 7 – FIRE AND SMOKE PROTECTION FEATURES

(Matrix Adoption Tables are nonregulatory, intended only as an aid to the code user.
See Chapter 1 for state agency authority and building applications.)

Adopting agency	BSC	BSC-CG	SFM	HCD			DSA			OSHPD							BSCC	DPH	AGR	DWR	CEC	CA	SL	SLC
				1	2	1/AC	AC	SS	SS/CC	1	1R	2	3	4	5	6								
Adopt entire chapter	X							X	X	X	X	X	X	X	X	X								
Adopt entire chapter as amended (amended sections listed below)			X	X	X																			
Adopt only those sections that are listed below																								
Chapter / Section																								
705.2.3.2			X																					
705.5			X																					
Table 705.5			X																					
705.13			X																					
Table 706.4			X																					
Table 707.3.10			X																					
707.5			X																					
708.1			X																					
708.3			X																					
709.3			X																					
709.5			X																					
709.5.1			X																					
710.2			X																					
710.4			X																					
710.8			X																					
716.2.2.1			X																					
716.2.6.6			X																					
716.2.9.4			X																					
717.5.2			X																					
717.5.4			X																					
717.5.4.1			X																					
717.5.5			X																					
721.2				X	X																			
721.2.1				X	X																			
722.7			X																					

The state agency does not adopt sections identified with the following symbol: †

The Office of the State Fire Marshal's adoption of this chapter or individual sections is applicable to structures regulated by other state agencies pursuant to Section 1.11.

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CHAPTER

7

FIRE AND SMOKE PROTECTION FEATURES

User notes:

About this chapter: Chapter 7 provides detailed requirements for fire-resistance-rated construction, including structural members, walls, partitions and horizontal assemblies. Other portions of the code describe where certain fire-resistance-rated elements are required. This chapter specifies how these elements are constructed, how openings in walls and partitions are protected and how penetrations of such elements are protected.

SECTION 701—GENERAL

701.1 Scope. The provisions of this chapter shall govern the materials, systems and assemblies used for structural fire resistance and fire-resistance-rated construction separation of adjacent spaces to safeguard against the spread of fire and smoke within a building and the spread of fire to or from buildings.

SECTION 702—MULTIPLE-USE FIRE ASSEMBLIES

702.1 Multiple-use fire assemblies. Fire assemblies that serve multiple purposes in a building shall comply with all of the requirements that are applicable for each of the individual fire assemblies.

SECTION 703—FIRE-RESISTANCE RATINGS AND FIRE TESTS

703.1 Scope. Materials prescribed herein for fire resistance shall conform to the requirements of this chapter.

703.2 Fire resistance. The fire-resistance rating of building elements, components or assemblies shall be determined in accordance with Section 703.2.1 or 703.2.2 without the use of automatic sprinklers or any other fire suppression system being incorporated, or in accordance with Section 703.2.3.

703.2.1 Tested assemblies. A fire-resistance rating of building elements, components or assemblies shall be determined by the test procedures set forth in ASTM E119 or UL 263. The fire-resistance rating of penetrations and fire-resistant joint systems shall be determined in accordance with Sections 714 and 715, respectively.

703.2.1.1 Nonsymmetrical wall construction. Interior walls and partitions of nonsymmetrical construction shall be tested with both faces exposed to the furnace, and the assigned fire-resistance rating shall be the shortest duration obtained from the two tests conducted in compliance with ASTM E119 or UL 263. Where evidence is furnished to show that the wall was tested with the least fire-resistant side exposed to the furnace, subject to acceptance of the building official, the wall need not be subjected to tests from the opposite side (see Section 705.5 for exterior walls).

703.2.1.2 Combustible components. Combustible aggregates are permitted in gypsum and Portland cement concrete mixtures for fire-resistance-rated construction. Any component material or admixture is permitted in assemblies if the resulting tested assembly meets the fire-resistance test requirements of this code.

703.2.1.3 Restrained classification. Fire-resistance-rated assemblies tested under ASTM E119 or UL 263 shall not be considered to be restrained unless evidence satisfactory to the building official is furnished by the registered design professional showing that the construction qualifies for a restrained classification in accordance with ASTM E119 or UL 263. Restrained construction shall be identified on the construction documents.

703.2.1.4 Supplemental features. Where materials, systems or devices that have not been tested as part of a fire-resistance-rated assembly are incorporated into the building element, component or assembly, sufficient data shall be made available to the building official to show that the required fire-resistance rating is not reduced.

703.2.1.5 Exterior bearing walls. In determining the fire-resistance rating of exterior bearing walls, compliance with the ASTM E119 or UL 263 criteria for unexposed surface temperature rise and ignition of cotton waste due to passage of flame or gases is required only for a period of time corresponding to the required fire-resistance rating of an exterior nonbearing wall with the same fire separation distance, and in a building of the same group. Where the fire-resistance rating determined in accordance with this exception exceeds the fire-resistance rating determined in accordance with ASTM E119 or UL 263, the fire exposure time period, water pressure and application duration criteria for the hose stream test of ASTM E119 or UL 263 shall be based on the fire-resistance rating determined in accordance with this section.

703.2.2 Analytical methods. The fire resistance of building elements, components or assemblies established by an analytical method shall be by any of the methods listed in this section, based on the fire exposure and acceptance criteria specified in ASTM E119 or UL 263.

1. Fire-resistance designs documented in approved sources.
2. Prescriptive designs of fire-resistance-rated building elements, components or assemblies as prescribed in Section 721.
3. Calculations in accordance with Section 722.
4. Engineering analysis based on a comparison of building element, component or assemblies designs having fire-resistance ratings as determined by the test procedures set forth in ASTM E119 or UL 263.
5. Fire-resistance designs certified by an approved agency.

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703.2.3 Approved alternate method. The fire resistance of building elements, components or assemblies not complying with Section 703.2.1 or 703.2.2 shall be permitted to be established by an alternative protection method in accordance with Section 104.2.3.

703.3 Noncombustibility tests. The tests indicated in Section 703.3.1 shall serve as criteria for acceptance of building materials as set forth in Sections 602.2, 602.3 and 602.4 in Types I, II, III and IV construction. The term "noncombustible" does not apply to the flame spread characteristics of interior finish or trim materials. A material shall not be classified as a noncombustible building construction material if it is subject to an increase in combustibility or flame spread beyond the limitations herein established through the effects of age, moisture or other atmospheric conditions.

703.3.1 Noncombustible materials. Materials required to be noncombustible shall be tested in accordance with ASTM E136. Alternately, materials required to be noncombustible shall be tested in accordance with ASTM E2652 using the acceptance criteria prescribed by ASTM E136.

Exception: Materials having a structural base of noncombustible material as determined in accordance with ASTM E136, or with ASTM E2652 using the acceptance criteria prescribed by ASTM E136, with a surfacing of not more than 0.125 inch (3.18 mm) in thickness having a flame spread index not greater than 50 when tested in accordance with ASTM E84 or UL 723 shall be acceptable as noncombustible.

703.4 Fire-resistance-rated glazing. Fire-resistance-rated glazing, when tested in accordance with ASTM E119 or UL 263 and complying with the requirements of Section 707, shall be permitted. Fire-resistance-rated glazing shall bear a label marked in accordance with Table 716.1(1) issued by an agency and shall be permanently identified on the glazing.

703.5 Marking and identification. Where there is an accessible concealed floor, floor-ceiling or attic space, fire walls, fire barriers, fire partitions, smoke barriers and smoke partitions or any other wall required to have protected openings or penetrations shall be effectively and permanently identified with signs or stenciling in the concealed space. Such identification shall:

1. Be located within 15 feet (4572 mm) of the end of each wall and at intervals not exceeding 30 feet (9144 mm) measured horizontally along the wall or partition.
2. Include lettering not less than 3 inches (76 mm) in height with a minimum $^{3}/_{8}$-inch (9.5 mm) stroke in a contrasting color incorporating the suggested wording, "FIRE AND/OR SMOKE BARRIER—PROTECT ALL OPENINGS," or other wording.

703.6 Determination of noncombustible protection time contribution. The time, in minutes, contributed to the fire-resistance rating by the noncombustible protection of mass timber building elements, components, or assemblies, shall be established through a comparison of assemblies tested using procedures set forth in ASTM E119 or UL 263. The test assemblies shall be identical in construction, loading and materials, other than the noncombustible protection. The two test assemblies shall be tested to the same criteria of structural failure with the following conditions:

1. Test Assembly 1 shall be without protection.
2. Test Assembly 2 shall include the representative noncombustible protection. The protection shall be fully defined in terms of configuration details, attachment details, joint sealing details, accessories and all other relevant details.

The noncombustible protection time contribution shall be determined by subtracting the fire-resistance time, in minutes, of Test Assembly 1 from the fire-resistance time, in minutes, of Test Assembly 2.

703.7 Sealing of adjacent mass timber elements. In buildings of Types IV-A, IV-B and IV-C construction, sealant or adhesive shall be provided to resist the passage of air in the following locations:

1. At abutting edges and intersections of mass timber building elements required to be fire-resistance rated.
2. At abutting intersections of mass timber building elements and building elements of other materials where both are required to be fire-resistance rated.

Sealants shall meet the requirements of ASTM C920. Adhesives shall meet the requirements of ASTM D3498.

Exception: Sealants or adhesives need not be provided where they are not a required component of a tested fire-resistance-rated assembly.

SECTION 704—FIRE-RESISTANCE RATING OF STRUCTURAL MEMBERS

704.1 Requirements. The fire-resistance ratings of structural members and assemblies shall comply with this section and the requirements for the type of construction as specified in Table 601.

704.1.1 Supporting construction. The fire-resistance ratings of supporting structural members and assemblies shall be not less than the ratings required for the fire-resistance-rated assemblies supported by the structural members.

Exception: Structural members and assemblies that support fire barriers, fire partitions, smoke barriers and horizontal assemblies as provided in Sections 707.5, 708.4, 709.4 and 711.2, respectively.

➡ **704.2 Protection of the primary structural frame.** Members of the primary structural frame that are required to have protection to achieve a fire-resistance rating shall be provided individual encasement protection by protecting them on all sides for the full length, including connections to other structural members, with materials having the required fire-resistance rating. Where a column extends through a ceiling, the encasement protection shall be continuous from the top of the foundation or floor/ceiling assembly below through the ceiling space to the top of the column.

Exceptions:

1. Individual encasement protection on all sides shall be permitted on all exposed sides provided that the extent of protection is in accordance with the required fire-resistance rating, as determined in Section 703.

2. Primary structural members other than columns that do not support more than two floors or one floor and roof, or a load-bearing wall or a nonload-bearing wall more than two stories high, are permitted to be protected by the membrane of a fire-resistance-rated wall or horizontal assembly where the membrane provides the required fire-resistance rating.
3. Columns that meet the limitations of Section 704.3.1.

704.3 Protection of secondary structural members. Secondary structural members that are required to have protection to achieve a fire-resistance rating shall be protected by individual encasement protection, or by the membrane of a fire-resistance-rated wall or horizontal assembly where the membrane provides the required fire-resistance rating.

704.3.1 Light-frame construction. Studs, columns and boundary elements that are integral elements in walls of light-frame construction and are located entirely between the top and bottom plates or tracks shall be permitted to have required fire-resistance ratings provided by the membrane protection provided for the wall.

704.3.2 Horizontal assemblies. Horizontal assemblies are permitted to be protected with a membrane or ceiling where the membrane or ceiling provides the required fire-resistance rating and is installed in accordance with Section 711.

704.4 Truss protection. The required thickness and construction of fire-resistance-rated assemblies enclosing trusses shall be based on the results of full-scale tests or combinations of tests on truss components or on approved calculations based on such tests that satisfactorily demonstrate that the assembly has the required fire resistance.

704.5 Attachments to structural members. The edges of lugs, brackets, rivets and bolt heads attached to structural members shall be permitted to extend to within 1 inch (25 mm) of the surface of the fire protection.

704.5.1 Secondary attachments to structural members. Where primary and secondary structural steel members require fire protection, any additional structural steel members having direct connection to the primary structural frame or secondary structural members shall be protected with the same fire-resistive material and thickness as required for the structural member. The protection shall extend away from the structural member a distance of not less than 12 inches (305 mm), or shall be applied to the entire length where the attachment is less than 12 inches (305 mm) long. Where an attachment is hollow and the ends are open, the fire-resistive material and thickness shall be applied to both exterior and interior of the hollow steel attachment.

704.6 Reinforcing. Thickness of protection for concrete or masonry reinforcement shall be measured to the outside of the reinforcement except that stirrups and spiral reinforcement ties are permitted to project not more than 0.5 inch (12.7 mm) into the protection.

704.7 Embedments and enclosures. Pipes, wires, conduits, ducts or other service facilities shall not be embedded in the required fire protective covering of a structural member that is required to be individually encased.

704.8 Impact protection. Where the fire protective covering of a structural member is subject to impact damage from moving vehicles, the handling of merchandise or other activity, the fire protective covering shall be protected by corner guards or by a substantial jacket of metal or other noncombustible material to a height adequate to provide full protection, but not less than 5 feet (1524 mm) from the finished floor.

Exception: Corner protection is not required on concrete columns in parking garages.

704.9 Exterior structural members. Load-bearing structural members located within the exterior walls or on the outside of a building or structure shall be provided with the highest fire-resistance rating as determined in accordance with the following:

1. As required by Table 601 for the type of building element based on the type of construction of the building.
2. As required by Table 601 for exterior bearing walls based on the type of construction.
3. As required by Table 705.5 for exterior walls based on the fire separation distance.

704.10 Bottom flange protection. Fire protection is not required at the bottom flange of lintels, shelf angles and plates, spanning not more than 6 feet 4 inches (1931 mm) whether part of the primary structural frame or not, and from the bottom flange of lintels, shelf angles and plates not part of the structural frame, regardless of span.

704.11 Seismic isolation systems. Fire-resistance ratings for the isolation system shall meet the fire-resistance rating required for the columns, walls or other structural elements in which the isolation system is installed in accordance with Table 601. Isolation systems required to have a fire-resistance rating shall be protected with approved materials or construction assemblies designed to provide the same degree of fire resistance as the structural element in which the system is installed when tested in accordance with ASTM E119 or UL 263 (see Section 703.2).

Such isolation system protection applied to isolator units shall be capable of retarding the transfer of heat to the isolator unit in such a manner that the required gravity load-carrying capacity of the isolator unit will not be impaired after exposure to the standard time-temperature curve fire test prescribed in ASTM E119 or UL 263 for a duration not less than that required for the fire-resistance rating of the structure element in which the system is installed.

Such isolation system protection applied to isolator units shall be suitably designed and securely installed so as not to dislodge, loosen, sustain damage or otherwise impair its ability to accommodate the seismic movements for which the isolator unit is designed and to maintain its integrity for the purpose of providing the required fire-resistance protection.

704.12 Sprayed fire-resistive materials (SFRM). Sprayed fire-resistive materials (SFRM) shall comply with Sections 704.12.1 through 704.12.5.

704.12.1 Fire-resistance rating. The application of SFRM shall be consistent with the fire-resistance rating and the listing, including, but not limited to, minimum thickness and dry density of the applied SFRM, method of application, substrate surface conditions and the use of bonding adhesives, sealants, reinforcing or other materials.

704.12.2 Manufacturer's installation instructions. The application of SFRM shall be in accordance with the manufacturer's installation instructions. The instructions shall include, but are not limited to, substrate temperatures and surface conditions and SFRM handling, storage, mixing, conveyance, method of application, curing and ventilation.

704.12.3 Substrate condition. The SFRM shall be applied to a substrate in compliance with Sections 704.12.3.1 and 704.12.3.2.

704.12.3.1 Surface conditions. Substrates to receive SFRM shall be free of dirt, oil, grease, release agents, loose scale and any other condition that prevents adhesion. The substrates shall be free of primers, paints and encapsulants other than those fire tested and listed by a nationally recognized testing agency. Primed, painted or encapsulated steel shall be allowed, provided that testing has demonstrated that required adhesion is maintained.

704.12.3.2 Primers, paints and encapsulants. Where the SFRM is to be applied over primers, paints or encapsulants other than those specified in the listing, the material shall be field tested in accordance with ASTM E736. Where testing of the SFRM with primers, paints or encapsulants demonstrates that required adhesion is maintained, SFRM shall be permitted to be applied to primed, painted or encapsulated wide flange steel shapes in accordance with the following conditions:

1. The beam flange width does not exceed 12 inches (305 mm); or
2. The column flange width does not exceed 16 inches (400 mm); or
3. The beam or column web depth does not exceed 16 inches (400 mm).
4. The average and minimum bond strength values shall be determined based on not fewer than five bond tests conducted in accordance with ASTM E736. Bond tests conducted in accordance with ASTM E736 shall indicate an average bond strength of not less than 80 percent and an individual bond strength of not less than 50 percent, when compared to the bond strength of the SFRM as applied to clean, uncoated $^{1}/_{8}$-inch-thick (3.2 mm) steel plate.

704.12.4 Temperature. A minimum ambient and substrate temperature of 40°F (4.44°C) shall be maintained during and for not fewer than 24 hours after the application of the SFRM, unless the manufacturer's instructions allow otherwise.

704.12.5 Finished condition. The finished condition of SFRM applied to structural members or assemblies shall not, upon complete drying or curing, exhibit cracks, voids, spalls, delamination or any exposure of the substrate. Surface irregularities of SFRM shall be deemed acceptable.

SECTION 705—EXTERIOR WALLS

705.1 General. Exterior walls shall comply with this section.

705.2 Projections. Cornices, eave overhangs, exterior balconies and similar projections extending beyond the exterior wall shall conform to the requirements of this section and Section 1405. Exterior egress balconies and exterior exit stairways and ramps shall comply with Sections 1021 and 1027, respectively. Projections shall not extend any closer to the line used to determine the fire separation distance than shown in Table 705.2.

Exception: Buildings on the same lot and considered as portions of one building in accordance with Section 705.3 are not required to comply with this section for projections between the buildings.

TABLE 705.2—MINIMUM DISTANCE OF PROJECTION

FIRE SEPARATION DISTANCE (FSD) (feet)	MINIMUM DISTANCE FROM LINE USED TO DETERMINE FSD
0 to less than 2	Projections not permitted
2 to less than 3	24 inches
3 to less than 5	Two-thirds of FSD
5 or greater	40 inches

For SI: 1 foot = 304.8 mm; 1 inch = 25.4 mm.

705.2.1 Types I and II construction. Projections from walls of Type I or II construction shall be of noncombustible materials or combustible materials as allowed by Sections 705.2.3.1 and 705.2.4.

705.2.2 Type III, IV or V construction. Projections from walls of Type III, IV or V construction shall be of any approved material.

705.2.3 Projection protection. Projections extending to 5 feet (1524 mm) or less from the line used to determine the fire separation distance shall be one of the following:

1. Noncombustible materials.
2. Combustible materials of not less than 1-hour fire-resistance-rated construction.
3. Heavy timber construction complying with Section 2304.11.
4. Fire-retardant-treated wood.
5. As permitted by Section 705.2.3.1.

Exception: Type VB construction shall be allowed for combustible projections in Group R-3 and U occupancies with a fire separation distance greater than or equal to 5 feet (1524 mm).

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705.2.3.1 Balconies and similar projections. Balconies and similar projections of combustible construction other than fire-retardant-treated wood shall be fire-resistance rated where required by Table 601 for floor construction or shall be of heavy timber construction in accordance with Section 2304.11. The aggregate length of the projections shall not exceed 50 percent of the building's perimeter on each floor.

Exceptions:

1. On buildings of Types I and II construction, three stories or less above grade plane, fire-retardant-treated wood shall be permitted for balconies, porches, decks and exterior stairways not used as required exits.
2. Untreated wood and plastic composites that comply with ASTM D7032 and Section 2612 are permitted for pickets, rails and similar guard components that are limited to 42 inches (1067 mm) in height.
3. Balconies and similar projections on buildings of Types III, IV-HT and V construction shall be permitted to be of Type V construction and shall not be required to have a fire-resistance rating where sprinkler protection is extended to these areas.
4. Where sprinkler protection is extended to the balcony areas, the aggregate length of the balcony on each floor shall not be limited.

705.2.3.2 Vents. [SFM] *Vents required by Section 2304.12.2.5 in fire-rated exterior balconies or elevated walkway surfaces shall be designed where the voids created at the intersection of the exterior curtain wall and the balcony floor are sealed with an approved material or system to retard the interior spread of flame, hot gases and products of combustion. Rated assemblies shall comply with Section 715. Ventilation openings shall comply with the fire sprinkler protection as required by Section 903.3.1.1 or 903.3.1.2 and the reference standard.*

705.2.4 Bay and oriel windows. Bay and oriel windows constructed of combustible materials shall conform to the type of construction required for the building to which they are attached.

Exception: Fire-retardant-treated wood shall be permitted on buildings three stories or less above grade plane of Type I, II, III or IV construction.

705.3 Buildings on the same lot. For the purposes of determining the required wall and opening protection, projections and roof-covering requirements, buildings on the same lot shall be assumed to have an imaginary line between them.

Where a new building is to be erected on the same lot as an existing building, the location of the assumed imaginary line with relation to the existing building shall be such that the exterior wall and opening protection of the existing building meet the criteria as set forth in Sections 705.5 and 705.9.

Exceptions:

1. Two or more buildings on the same lot shall be either regulated as separate buildings or shall be considered as portions of one building if the aggregate area of such buildings is within the limits specified in Chapter 5 for a single building. Where the buildings contain different occupancy groups or are of different types of construction, the area shall be that allowed for the most restrictive occupancy or construction.
2. Where an S-2 parking garage of Construction Type I or IIA is erected on the same lot as a Group R-2 building, and there is no fire separation distance between these buildings, then the adjoining exterior walls between the buildings are permitted to have occupant use openings in accordance with Section 706.8. However, opening protectives in such openings shall only be required in the exterior wall of the S-2 parking garage, not in the exterior wall openings in the R-2 building, and these opening protectives in the exterior wall of the S-2 parking garage shall be not less than $1^1/_2$-hour fire protection rating.

705.4 Materials. Exterior walls shall be of materials permitted by the building's type of construction.

705.5 Fire-resistance ratings. *For other than Group A, E, H, I, L and R occupancies, high-rise buildings, and other applications listed in Section 1.11* exterior walls shall be fire-resistance rated in accordance with Table 601, based on the type of construction, and Table 705.5, based on the fire separation distance. The required fire-resistance rating of exterior walls with a fire separation distance of greater than 10 feet (3048 mm) shall be rated for exposure to fire from the inside. The required fire-resistance rating of exterior walls with a fire separation distance of less than or equal to 10 feet (3048 mm) shall be rated for exposure to fire from both sides.

For Group A, E, H, I, L and R occupancies, high-rise buildings, and other applications listed in Section 1.11 regulated by the Office of the State Fire Marshal, exterior walls shall be fire-resistance rated in accordance with Tables 601 and 705.5 and this section. The required fire-resistance rating of exterior walls shall be rated for exposure to fire from both sides.

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TABLE 705.5—FIRE-RESISTANCE RATING REQUIREMENTS FOR EXTERIOR WALLS BASED ON FIRE SEPARATION DISTANCE [a, d, g]

FIRE SEPARATION DISTANCE = X (feet)	TYPE OF CONSTRUCTION	OCCUPANCY GROUP H [e], *L*	OCCUPANCY GROUP F-1, M, S-1 [f]	OCCUPANCY GROUP A, B, E, F-2, I, R[i], S-2, U [h]
X < 5 [b]	All	3	2	1
5 ≤ X < 10	IA, IVA	3	2	1
	Others	2	1	1
10 ≤ X < 30	IA, IB, IVA, IVB	2	1	1 [c]
	IIB, VB	1	0	0
	Others	1	1	1 [c]
X ≥ 30	All	0	0	0

For SI: 1 foot = 304.8 mm.

a. Load-bearing exterior walls shall also comply with the fire-resistance rating requirements of Table 601.

b. See Section 706.1.1 for party walls.

c. Open parking garages complying with Section 406 shall not be required to have a fire-resistance rating.

d. The fire-resistance rating of an exterior wall is determined based upon the fire separation distance of the exterior wall and the story in which the wall is located.

e. For special requirements for Group H occupancies, see Section 415.6.

f. For special requirements for Group S aircraft hangars, see Section 412.3.1.

g. Where Section 705.9.1 permits nonbearing exterior walls with unlimited area of unprotected openings, the required fire-resistance rating for the exterior walls is 0 hours.

h. For a building containing only a Group U occupancy private garage or carport, the exterior wall shall not be required to have a fire-resistance rating where the fire separation distance is 5 feet (1523 mm) or greater *or where equipped throughout with an automatic sprinkler system in accordance with Section 903.3 the fire-resistance rating shall not be required where the fire separation distance is 3 feet or greater.*

i. For a Group R-3 building of Type II-B or Type V-B construction, the exterior wall shall not be required to have a fire-resistance rating where the fire separation distance is 5 feet (1523 mm) or greater *or where equipped throughout with an automatic sprinkler system in accordance with Section 903.3 the fire-resistance rating shall not be required where the fire separation distance is 3 feet or greater.*

705.6 Continuity. The fire-resistance rating of exterior walls shall extend from the top of the foundation or floor/ceiling assembly below to one of the following:

1. The underside of the floor sheathing, roof sheathing, deck or slab above.
2. The underside of a floor/ceiling or roof/ceiling assembly having a fire-resistance rating equal to or greater than the exterior wall and the fire separation distance is greater than 10 feet.

Parapets shall be provided as required by Section 705.12.

705.7 Structural stability. Interior structural elements that brace the exterior wall but that are not located within the plane of the exterior wall shall have the minimum fire-resistance rating required in Table 601 for that structural element. Structural elements that brace the exterior wall but are located outside of the exterior wall or within the plane of the exterior wall shall have the minimum fire-resistance rating required in Table 601 and Table 705.5 for the exterior wall.

705.7.1 Floor assemblies in Type III construction. In Type III construction where a floor assembly supports gravity loads from an exterior wall, the fire-resistance rating of the portion of the floor assembly that supports the exterior wall shall be not less than the fire-resistance rating required for the exterior wall in Table 601. The fire-resistance rating provided by the portion of the floor assembly supporting and within the plane of the exterior wall shall be permitted to include the contribution of the ceiling membrane when considering exposure to fire from the inside. Where a floor assembly supports gravity loads from an exterior wall, the building elements of the floor construction within the plane of the exterior wall, including but not limited to rim joists, rim boards and blocking, shall be in accordance with the requirements for interior building elements of Type III construction.

705.8 Unexposed surface temperature. Where protected openings are not limited by Section 705.9, the limitation on the rise of temperature on the unexposed surface of exterior walls as required by ASTM E119 or UL 263 shall not apply. Where protected openings are limited by Section 705.9, the limitation on the rise of temperature on the unexposed surface of exterior walls as required by ASTM E119 or UL 263 shall not apply provided that a correction is made for radiation from the unexposed exterior wall surface in accordance with the following formula:

Equation 7-1 $A_e = A + (A_f \times F_{eo})$

where:

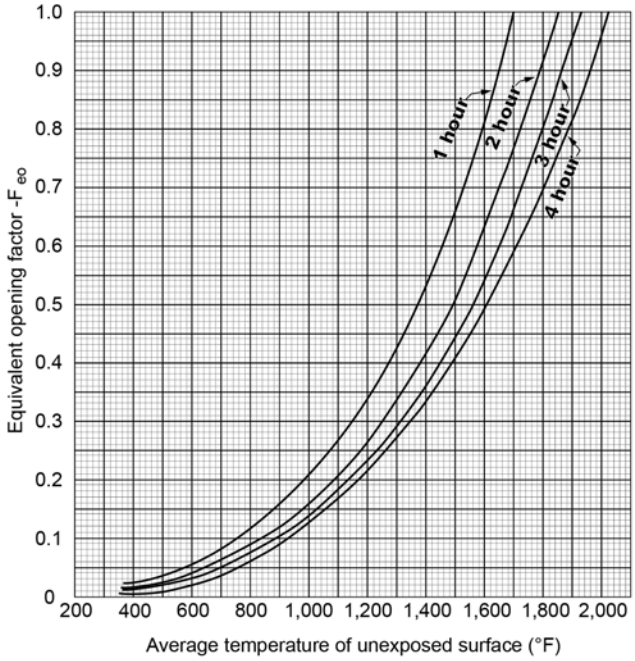
A_e = Equivalent area of protected openings.

A = Actual area of protected openings.

A_f = Area of exterior wall surface in the story under consideration exclusive of openings, on which the temperature limitations of ASTM E119 or UL 263 for walls are exceeded.

F_{eo} = An "equivalent opening factor" derived from Figure 705.8 based on the average temperature of the unexposed wall surface and the fire-resistance rating of the wall.

FIGURE 705.8—EQUIVALENT OPENING FACTOR



For SI:°C = [(°F) - 32]/1.8.

705.9 Openings. Openings in exterior walls shall comply with Sections 705.9.1 through 705.9.6.

Table 1: TABLE 705.9—MAXIMUM AREA OF EXTERIOR WALL OPENINGS BASED ON FIRE SEPARATION DISTANCE AND DEGREE OF OPENING PROTECTION

FIRE SEPARATION DISTANCE (feet)	DEGREE OF OPENING PROTECTION	ALLOWABLE AREA[a]
0 to less than 3[b, c, k]	Unprotected, Nonsprinklered (UP, NS)	Not Permitted[k]
	Unprotected, Sprinklered (UP, S)[i]	Not Permitted[k]
	Protected (P)	Not Permitted[k]
3 to less than 5[d, e]	Unprotected, Nonsprinklered (UP, NS)	Not Permitted
	Unprotected, Sprinklered (UP, S)[i]	15%
	Protected (P)	15%
5 to less than 10[e, f, j]	Unprotected, Nonsprinklered (UP, NS)	10%[h]
	Unprotected, Sprinklered (UP, S)[i]	25%
	Protected (P)	25%
10 to less than 15[e, f, g, j]	Unprotected, Nonsprinklered (UP, NS)	15%[h]
	Unprotected, Sprinklered (UP, S)[i]	45%
	Protected (P)	45%
15 to less than 20[f, g, j]	Unprotected, Nonsprinklered (UP, NS)	25%
	Unprotected, Sprinklered (UP, S)[i]	75%
	Protected (P)	75%
20 to less than 25[f, g, j]	Unprotected, Nonsprinklered (UP, NS)	45%
	Unprotected, Sprinklered (UP, S)[i]	No Limit
	Protected (P)	No Limit
25 to less than 30[f, g, j]	Unprotected, Nonsprinklered (UP, NS)	70%
	Unprotected, Sprinklered (UP, S)[i]	No Limit
	Protected (P)	No Limit

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Table 1: TABLE 705.9—MAXIMUM AREA OF EXTERIOR WALL OPENINGS BASED ON FIRE SEPARATION DISTANCE AND DEGREE OF OPENING PROTECTION —continued

FIRE SEPARATION DISTANCE (feet)	DEGREE OF OPENING PROTECTION	ALLOWABLE AREA[a]
30 or greater	Unprotected, Nonsprinklered (UP, NS)	No Limit
	Unprotected, Sprinklered (UP, S)[i]	No Limit
	Protected (P)	No Limit

For SI: 1 foot = 304.8 mm.
UP, NS = Unprotected openings in buildings not equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.
UP, S = Unprotected openings in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.
P = Openings protected with an opening protective assembly in accordance with Section 705.9.2.
a. Values indicated are the percentage of the area of the exterior wall, per *story*.
b. For the requirements for fire walls of buildings with differing heights, see Section 706.6.1.
c. For openings in a fire wall for buildings on the same *lot*, see Section 706.8.
d. The maximum percentage of unprotected and protected openings shall be 25 percent for Group R-3 occupancies.
e. Unprotected openings shall not be permitted for openings with a fire separation distance of less than 15 feet for Group H-2 and H-3 occupancies.
f. The area of unprotected and protected openings shall not be limited for Group R-3 occupancies, with a fire separation distance of 5 feet or greater.
g. The area of openings in an open parking garage in accordance with Section 406.5 with a fire separation distance of 10 feet or greater shall not be limited.
h. Includes buildings accessory to Group R-3.
i. Not applicable to Group H-1, H-2 and H-3 occupancies.
j. The area of openings in a building containing only a Group U occupancy private garage or carport with a fire separation distance of 5 feet or greater shall not be limited.
k. For openings between S-2 parking garage and Group R-2 building, see Section 705.3, Exception 2.

705.9.1 Allowable area of openings. The maximum area of unprotected and protected openings permitted in an exterior wall in any story of a building shall not exceed the percentages specified in Table 705.9 based on the fire separation distance of each individual story.

Exceptions:

1. In other than Group H occupancies, unlimited unprotected openings are permitted in the first story above grade plane where the wall faces one of the following:
   1.1. A street and has a fire separation distance of more than 15 feet (4572 mm).
   1.2. An unoccupied space. The unoccupied space shall be on the same lot or dedicated for public use, shall be not less than 30 feet (9144 mm) in width and shall have access from a street by a posted fire lane in accordance with the *California Fire Code.*
2. Buildings whose exterior bearing walls, exterior nonbearing walls and exterior primary structural frame are not required to be fire-resistance rated shall be permitted to have unlimited unprotected openings.

705.9.2 Protected openings. Where openings are required to be protected, opening protectives shall comply with Section 716.

Exception: Opening protectives are not required where the building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 and the exterior openings are protected by a water curtain using automatic sprinklers approved for that use.

705.9.3 Unprotected openings. Where unprotected openings are permitted, windows and doors shall be constructed of any approved materials. Glazing shall conform to the requirements of Chapters 24 and 26.

705.9.4 Mixed openings. Where both unprotected and protected openings are located in the exterior wall in any story of a building, the total area of openings shall be determined in accordance with the following:

Equation 7-2 $(A_p/a_p) + (A_u/a_u) \leq 1$

A_p = Actual area of protected openings, or the equivalent area of protected openings, A_e (see Section 705.8).

a_p = Allowable area of protected openings.

A_u = Actual area of unprotected openings.

a_u = Allowable area of unprotected openings.

705.9.5 Vertical separation of openings. Openings in exterior walls in adjacent stories shall be separated vertically to protect against fire spread on the exterior of the buildings where the openings are within 5 feet (1524 mm) of each other horizontally and the opening in the lower story is not a protected opening with a fire protection rating of not less than $^3/_4$ hour. Such openings shall be separated vertically not less than 3 feet (914 mm) by spandrel girders, exterior walls or other similar assemblies that have a fire-resistance rating of not less than 1 hour, rated for exposure to fire from both sides, or by flame barriers that extend horizontally not less than 30 inches (762 mm) beyond the exterior wall. Flame barriers shall have a fire-resistance rating of not less than 1 hour. The unexposed surface temperature limitations specified in ASTM E119 or UL 263 shall not apply to the flame barriers unless otherwise required by the provisions of this code.

Exceptions:

1. This section shall not apply to buildings that are three stories or less above grade plane.
2. This section shall not apply to buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2.

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3. Open parking garages.

705.9.6 Vertical exposure. For buildings on the same lot, opening protectives having a fire protection rating of not less than $^3/_4$ hour shall be provided in every opening that is less than 15 feet (4572 mm) vertically above the roof of an adjacent building or structure based on assuming an imaginary line between them. The opening protectives are required where the fire separation distances from the imaginary line to each building or structure are less than 15 feet (4572 mm).

Exceptions:

1. Opening protectives are not required where the roof assembly of the adjacent building or structure has a fire-resistance rating of not less than 1 hour for a minimum distance of 10 feet (3048 mm) from the exterior wall facing the imaginary line and the entire length and span of the supporting elements for the fire-resistance-rated roof assembly has a fire-resistance rating of not less than 1 hour.
2. Buildings on the same lot and considered as portions of one building in accordance with Section 705.3 are not required to comply with Section 705.9.6.

705.10 Joints. Joints made in or between exterior walls required by this section to have a fire-resistance rating shall comply with Section 715.

Exception: Joints in exterior walls that are permitted to have unprotected openings.

705.10.1 Voids. The void created at the intersection of a floor/ceiling assembly and an exterior curtain wall assembly shall be protected in accordance with Section 715.4.

705.11 Ducts and air transfer openings. Penetrations by air ducts and air transfer openings in fire-resistance-rated exterior walls required to have protected openings shall comply with Section 717.

Exception: Foundation vents installed in accordance with this code are permitted.

705.12 Parapets. Parapets shall be provided on exterior walls of buildings.

Exceptions: A parapet need not be provided on an exterior wall where any of the following conditions exist:

1. The wall is not required to be fire-resistance rated in accordance with Table 705.5 because of fire separation distance.
2. The building has an area of not more than 1,000 square feet (93 m^2) on any floor.
3. Walls that terminate at roofs of not less than 2-hour fire-resistance-rated construction or where the roof, including the deck or slab and supporting construction, is constructed entirely of noncombustible materials.
4. One-hour fire-resistance-rated exterior walls that terminate at the underside of the roof sheathing, deck or slab, provided that:
   4.1. Where the roof/ceiling framing elements are parallel to the walls, such framing and elements supporting such framing shall not be of less than 1-hour fire-resistance-rated construction for a width of 4 feet (1220 mm) for Groups R and U and 10 feet (3048 mm) for other occupancies, measured from the interior side of the wall.
   4.2. Where roof/ceiling framing elements are not parallel to the wall, the entire span of such framing and elements supporting such framing shall not be of less than 1-hour fire-resistance-rated construction.
   4.3. Openings in the roof shall not be located within 5 feet (1524 mm) of the 1-hour fire-resistance-rated exterior wall for Groups R and U and 10 feet (3048 mm) for other occupancies, measured from the interior side of the wall.
   4.4. The entire building shall be provided with not less than a Class B roof covering.
5. In Groups R-2 and R-3 where the entire building is provided with a Class C roof covering, the exterior wall shall be permitted to terminate at the underside of the roof sheathing or deck in Types III, IV and V construction, provided that one or both of the following criteria is met:
   5.1. The roof sheathing or deck is constructed of approved noncombustible materials or of fire-retardant-treated wood for a distance of 4 feet (1220 mm).
   5.2. The roof is protected with 0.625-inch (16 mm) Type X gypsum board directly beneath the underside of the roof sheathing or deck, supported by not less than nominal 2-inch (51 mm) ledgers attached to the sides of the roof framing members for a minimum distance of 4 feet (1220 mm).
6. Where the wall is permitted to have not less than 25 percent of the exterior wall areas containing unprotected openings based on fire separation distance as determined in accordance with Section 705.9.

705.12.1 Parapet construction. Required parapets shall have the same fire-resistance rating as that required for the supporting wall, and on any side adjacent to a roof surface, shall have noncombustible faces for the uppermost 18 inches (457 mm), including counterflashing and coping materials. The height of the parapet shall be not less than 30 inches (762 mm) above the point where the roof surface and the wall intersect. Where the roof slopes toward a parapet at a slope greater than 2 units vertical in 12 units horizontal (16.7-percent slope), the parapet shall extend to the same height as any portion of the roof within a fire separation distance where protection of wall openings is required, but the height shall be not less than 30 inches (762 mm).

705.13 Exterior graphics on exterior walls of high-rise buildings. *Where installed on the exterior walls of high-rise buildings, exterior graphics, both permanent and temporary, greater than 100 square feet in area or greater than 10 feet in either dimension shall comply with the following conditions subject to the review and approval of the fire code official and building official:*

1. The materials used for graphics installed at a height greater than 40 feet above the grade plane shall be noncombustible materials or shall have a flame spread index not greater than 25 when tested in accordance with ASTM E84 or UL 723.

2. *The method of attachment and mounting of the graphics to the exterior wall shall be such that the graphics are securely attached.*
3. *The graphics shall not interfere with the active or passive ventilation required for the building and the required smoke control systems in the building.*
4. *The graphics shall not impair the functions of any fire or life safety systems in the building.*

SECTION 706—FIRE WALLS

706.1 General. Fire walls shall be constructed in accordance with Sections 706.2 through 706.11. The extent and location of such fire walls shall provide a complete separation. Where a fire wall separates occupancies that are required to be separated by a fire barrier wall, the most restrictive requirements of each separation shall apply.

706.1.1 Party walls. Any wall located on a lot line between adjacent buildings, which is used or adapted for joint service between the two buildings, shall be constructed as a fire wall in accordance with Section 706. Party walls shall be constructed without openings and shall create separate buildings.

Exceptions:

1. Openings in a party wall separating an anchor building and a mall shall be in accordance with Section 402.4.2.2.1.
2. Party walls and fire walls are not required on lot lines dividing a building for ownership purposes where the aggregate height and area of the portions of the building located on both sides of the lot line do not exceed the maximum height and area requirements of this code. For the building official's review and approval, the official shall be provided with copies of dedicated access easements and contractual agreements that permit the owners of portions of the building located on either side of the lot line access to the other side for purposes of maintaining fire and life safety systems necessary for the operation of the building.

706.1.2 Deemed to comply. Fire walls designed and constructed in accordance with NFPA 221 shall be deemed to comply with this section, subject to the limitations of Section 102.4. The required fire-resistance rating shall be determined by Section 706.4.

706.2 Structural stability. Fire walls shall be designed and constructed to allow collapse of the structure on either side without collapse of the wall under fire conditions.

Exception: In Seismic Design Categories D through F, where double fire walls are used in accordance with NFPA 221, floor and roof sheathing not exceeding $^{3}/_{4}$ inch (19.05 mm) thickness shall be permitted to be continuous through the wall assemblies of light frame construction.

706.3 Materials. Fire walls shall be of any approved noncombustible materials.

Exception: Buildings of Type V construction.

706.4 Fire-resistance rating. Fire walls shall have a fire-resistance rating of not less than that required by Table 706.4.

TABLE 706.4—FIRE WALL FIRE-RESISTANCE RATINGS

GROUP	FIRE-RESISTANCE RATING (hours)
A, B, E, H-4, I, R-1, R-2, *R-2.1, R-2.2,* U, *L*	3 [a]
F-1, H-3b, H-5, M, S-1	3
H-1, H-2	4 [b]
F-2, S-2, R-3, R-4	2

a. In Type II or V construction, walls shall be permitted to have a 2-hour fire-resistance rating.
b. For Group H-1, H-2 or H-3 buildings, also see Sections 415.7 and 415.8.

706.5 Horizontal continuity. Fire walls shall be continuous from exterior wall to exterior wall and shall extend not less than 18 inches (457 mm) beyond the exterior surface of exterior walls.

Exceptions:

1. Fire walls shall be permitted to terminate at the interior surface of combustible exterior sheathing or siding provided that the exterior wall has a fire-resistance rating of not less than 1 hour for a horizontal distance of not less than 4 feet (1220 mm) on both sides of the fire wall. Openings within such exterior walls shall be protected by opening protectives having a fire protection rating of not less than $^{3}/_{4}$ hour.
2. Fire walls shall be permitted to terminate at the interior surface of noncombustible exterior sheathing, exterior siding or other noncombustible exterior finishes provided that the sheathing, siding or other exterior noncombustible finish extends a horizontal distance of not less than 4 feet (1220 mm) on both sides of the fire wall.
3. Fire walls shall be permitted to terminate at the interior surface of noncombustible exterior sheathing where the building on each side of the fire wall is protected by an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2.

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706.5.1 Exterior walls. Where the fire wall intersects exterior walls, the fire-resistance rating and opening protection of the exterior walls shall comply with one of the following:

1. The exterior walls on both sides of the fire wall shall have a 1-hour fire-resistance rating with $^{3}/_{4}$-hour protection where opening protection is required by Section 705.9. The fire-resistance rating of the exterior wall shall extend not less than 4 feet (1220 mm) on each side of the intersection of the fire wall to exterior wall. Exterior wall intersections at fire walls that form an angle equal to or greater than 180 degrees (3.14 rad) do not need exterior wall protection.
2. Buildings or spaces on both sides of the intersecting fire wall shall assume to have an imaginary lot line at the fire wall and extending beyond the exterior of the fire wall. The location of the assumed line in relation to the exterior walls and the fire wall shall be such that the exterior wall and opening protection meet the requirements set forth in Sections 705.5 and 705.9. Such protection is not required for exterior walls terminating at fire walls that form an angle equal to or greater than 180 degrees (3.14 rad).

706.5.2 Horizontal projecting elements. Fire walls shall extend to the outer edge of horizontal projecting elements such as balconies, roof overhangs, canopies, marquees and similar projections that are within 4 feet (1220 mm) of the fire wall.

Exceptions:

1. Horizontal projecting elements without concealed spaces, provided that the exterior wall behind and below the projecting element has not less than 1-hour fire-resistance-rated construction for a distance not less than the depth of the projecting element on both sides of the fire wall. Openings within such exterior walls shall be protected by opening protectives having a fire protection rating of not less than $^{3}/_{4}$ hour.
2. Noncombustible horizontal projecting elements with concealed spaces, provided that a minimum 1-hour fire-resistance-rated wall extends through the concealed space. The projecting element shall be separated from the building by not less than 1-hour fire-resistance-rated construction for a distance on each side of the fire wall equal to the depth of the projecting element. The wall is not required to extend under the projecting element where the building exterior wall is not less than 1-hour fire-resistance rated for a distance on each side of the fire wall equal to the depth of the projecting element. Openings within such exterior walls shall be protected by opening protectives having a fire protection rating of not less than $^{3}/_{4}$ hour.
3. For combustible horizontal projecting elements with concealed spaces, the fire wall need only extend through the concealed space to the outer edges of the projecting elements. The exterior wall behind and below the projecting element shall be of not less than 1-hour fire-resistance-rated construction for a distance not less than the depth of the projecting elements on both sides of the fire wall. Openings within such exterior walls shall be protected by opening protectives having a fire protection rating of not less than $^{3}/_{4}$ hour.

706.6 Vertical continuity. Fire walls shall extend from the foundation to a termination point not less than 30 inches (762 mm) above both adjacent roofs.

Exceptions:

1. Stepped buildings in accordance with Section 706.6.1.
2. Two-hour fire-resistance-rated walls shall be permitted to terminate at the underside of the roof sheathing, deck or slab, provided that all of the following requirements are met:
   2.1. The lower roof assembly within 4 feet (1220 mm) of the wall has not less than a 1-hour fire-resistance rating and the entire length and span of supporting elements for the rated roof assembly has a fire-resistance rating of not less than 1 hour.
   2.2. Openings in the roof shall not be located within 4 feet (1220 mm) of the fire wall.
   2.3. Each building shall be provided with not less than a Class B roof covering.
3. Walls shall be permitted to terminate at the underside of noncombustible roof sheathing, deck or slabs where both buildings are provided with not less than a Class B roof covering. Openings in the roof shall not be located within 4 feet (1220 mm) of the fire wall.
4. In buildings of Types III, IV and V construction, walls shall be permitted to terminate at the underside of combustible roof sheathing or decks, provided that all of the following requirements are met:
   4.1. Roof openings are not less than 4 feet (1220 mm) from the fire wall.
   4.2. The roof is covered with a minimum Class B roof covering.
   4.3. The roof sheathing or deck is constructed of fire-retardant-treated wood for a distance of 4 feet (1220 mm) on both sides of the wall or the roof is protected with $^{5}/_{8}$-inch (15.9 mm) Type X gypsum board directly beneath the underside of the roof sheathing or deck, supported by not less than 2-inch (51 mm) nominal ledgers attached to the sides of the roof framing members for a distance of not less than 4 feet (1220 mm) on both sides of the fire wall.
5. In buildings designed in accordance with Section 510.2, fire walls located above the 3-hour horizontal assembly required by Section 510.2, Item 1 shall be permitted to extend from the top of this horizontal assembly.
6. Buildings with sloped roofs in accordance with Section 706.6.2.

706.6.1 Stepped buildings. Where a fire wall also serves as an exterior wall for a building and separates buildings having different roof levels, such wall shall terminate at a point not less than 30 inches (762 mm) above the lower roof level. Exterior walls above the fire wall extending more than 30 inches (762 mm) above the lower roof shall be of not less than 1-hour fire-resistance-rated

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construction from both sides with openings protected by fire assemblies having a fire protection rating of not less than $^3/_4$ hour. Portions of the exterior walls greater than 15 feet (4572 mm) above the lower roof shall be of nonfire-resistance-rated construction unless otherwise rated construction is required by other provisions of this code.

Exception: A fire wall serving as part of an exterior wall that separates buildings having different roof levels shall be permitted to terminate at the underside of the roof sheathing, deck or slab of the lower roof, provided that Items 1, 2 and 3 are met. The exterior wall above the fire wall is not required to be of fire-resistance-rated construction unless required by other provisions of this code.

1. The lower roof assembly within 10 feet (3048 mm) of the fire wall has not less than a 1-hour fire-resistance rating.
2. The entire length and span of supporting elements for the rated roof assembly shall have a fire -resistance rating of not less than 1 hour.
3. Openings in the lower roof shall not be located within 10 feet (3048 mm) of the fire wall.

706.6.2 Buildings with sloped roofs. Where a fire wall serves as an interior wall for a building, and the roof on one side or both sides of the fire wall slopes toward the fire wall at a slope greater than 2 units vertical in 12 units horizontal (2:12), the fire wall shall extend to a height equal to the height of the roof located 4 feet (1219 mm) from the fire wall plus 30 inches (762 mm). The extension of the fire wall shall be not less than 30 inches (762 mm).

706.7 Combustible framing in fire walls. Adjacent combustible members entering into a concrete or masonry fire wall from opposite sides shall not have less than a 4-inch (102 mm) distance between embedded ends. Where combustible members frame into hollow walls or walls of hollow units, hollow spaces shall be solidly filled for the full thickness of the wall and for a distance not less than 4 inches (102 mm) above, below and between the structural members, with noncombustible materials approved for fireblocking.

706.8 Openings. Each opening through a fire wall shall be protected in accordance with Section 716 and shall not exceed 156 square feet (15 m^2). The aggregate width of openings at any floor level shall not exceed 25 percent of the length of the wall.

Exceptions:

1. Openings are not permitted in party walls constructed in accordance with Section 706.1.1.
2. Openings shall not be limited to 156 square feet (15 m^2) where both buildings are equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1.

706.9 Penetrations. Penetrations of fire walls shall comply with Section 714.

706.10 Joints. Joints made in or between fire walls shall comply with Section 715.

706.11 Ducts and air transfer openings. Ducts and air transfer openings shall not penetrate fire walls.

Exception: Penetrations by ducts and air transfer openings of fire walls that are not on a lot line shall be allowed provided that the penetrations comply with Section 717. The size and aggregate width of all openings shall not exceed the limitations of Section 706.8.

SECTION 707—FIRE BARRIERS

707.1 General. Fire barriers installed as required elsewhere in this code or the *California Fire Code* shall comply with this section.

707.2 Materials. Fire barriers shall be of materials permitted by the building type of construction.

707.3 Fire-resistance rating. The fire-resistance rating of fire barriers shall comply with this section.

707.3.1 Shaft enclosures. The fire-resistance rating of the fire barrier separating building areas from a shaft shall comply with Section 713.4.

707.3.2 Interior exit stairway and ramp construction. The fire-resistance rating of the fire barrier separating building areas from an interior exit stairway or ramp shall comply with Section 1023.1.

707.3.3 Enclosures for exit access stairways. The fire-resistance rating of the fire barrier separating building areas from an exit access stairway or ramp shall comply with Section 713.4.

707.3.4 Exit passageway. The fire-resistance rating of the fire barrier separating building areas from an exit passageway shall comply with Section 1024.3.

707.3.5 Horizontal exit. The fire-resistance rating of the separation between building areas connected by a horizontal exit shall comply with Section 1026.1.

707.3.6 Atriums. The fire-resistance rating of the fire barrier separating atriums shall comply with Section 404.6.

707.3.7 Incidental uses. The fire barrier separating incidental uses from other spaces in the building shall have a fire-resistance rating of not less than that indicated in Table 509.1.

707.3.8 Control areas. Fire barriers separating control areas shall have a fire-resistance rating of not less than that required in Section 414.2.4.

707.3.9 Separated occupancies. Where the provisions of Section 508.4 are applicable, the fire barrier separating mixed occupancies shall have a fire-resistance rating of not less than that indicated in Table 508.4 based on the occupancies being separated.

707.3.10 Fire areas. The fire barriers, fire walls, horizontal assemblies or combinations thereof separating a single occupancy into different fire areas shall have a fire-resistance rating of not less than that indicated in Table 707.3.10. The fire barriers, fire walls, horizontal assemblies or combinations thereof separating fire areas of mixed occupancies shall have a fire-resistance rating of not less than the highest value indicated in Table 707.3.10 for the occupancies under consideration.

TABLE 707.3.10—FIRE-RESISTANCE-RATING REQUIREMENTS FOR FIRE BARRIERS, FIRE WALLS OR HORIZONTAL ASSEMBLIES BETWEEN FIRE AREAS	
OCCUPANCY GROUP	**FIRE-RESISTANCE RATING (hours)**
H-1, H-2	4
F-1, H-3, S-1	3
A, B, E, F-2, H-4, H-5, I, *L,* M, R, S-2	2
U	1

707.3.11 Horizontal separation offsets. The fire-resistance rating of a fire barrier serving as the vertical offset in a horizontal building separation shall comply with Section 510.2.

707.4 Exterior walls. Where exterior walls serve as a part of a required fire-resistance-rated shaft, or separation or enclosure for a stairway, ramp or exit passageway, such walls shall comply with the requirements of Section 705 for exterior walls and the fire-resistance-rated enclosure or separation requirements shall not apply.

Exceptions:

1. Exterior walls required to be fire-resistance rated in accordance with Section 1021 for exterior egress balconies, Section 1023.7 for interior exit stairways and ramps, Section 1024.8 for exit passageways and Section 1027.6 for exterior exit stairways and ramps.
2. Exterior walls required to be fire-resistance rated in accordance with Section 1207 of the *California Fire Code* for enclosure of energy storage systems.

707.5 Continuity. Fire barriers shall extend from the top of the foundation or floor/ceiling assembly below to the underside of the floor or roof sheathing, slab or deck above and shall be securely attached thereto. Such fire barriers shall be continuous through concealed space, such as the space above a suspended ceiling. Joints and voids at intersections shall comply with Sections 707.8 and 707.9

Exceptions:

1. Shaft enclosures shall be permitted to terminate at a top enclosure complying with Section 713.12.
2. Interior exit stairway and ramp enclosures required by Section 1023 and exit access stairway and ramp enclosures required by Section 1019 shall be permitted to terminate at a top enclosure complying with Section 713.12.
3. An exit passageway enclosure required by Section 1024.3 that does not extend to the underside of the floor sheathing, roof sheathing, slab or deck above shall be enclosed at the top with construction of the same fire-resistance rating as required for the exit passageway.
4. *In Group I-2 occupancies, in other than rooms containing stationary fuel cell power systems required to be separated per California Fire Code Section 1206.6.2, fire barriers required by Section 509.4 shall be permitted to terminate at an individually protected structural member in the same plane, provided the structural member has a solid web or solid surface along its length for the full height of the structural member and has a fire-resistance rating of not less than that required for the fire barrier wall.*
5. *In Group I-2 occupancies, in other than rooms containing stationary fuel cell power systems required to be separated per California Fire Code Section 1206.6.2, fire barrier separations required by Section 509.4 that do not extend to the underside of the roof sheathing.*

707.5.1 Supporting construction. The supporting construction for a fire barrier shall be protected to afford the required fire-resistance rating of the fire barrier supported. Hollow vertical spaces within a fire barrier shall be fireblocked in accordance with Section 718.2 at every floor level.

Exceptions:

1. The maximum required fire-resistance rating for assemblies supporting fire barriers separating tank storage as provided for in Section 415.9.1.2 shall be 2 hours, but not less than required by Table 601 for the building construction type.
2. Supporting construction for 1-hour fire barriers required by Table 509.1 in buildings of Types IIB, IIIB and VB construction is not required to be fire-resistance rated unless required by other sections of this code.

707.6 Openings. Openings in a fire barrier shall be protected in accordance with Section 716. Openings shall be limited to a maximum aggregate width of 25 percent of the length of the wall, and the maximum area of any single opening shall not exceed 156 square feet (15 m^2). Openings in enclosures for shafts, interior exit stairways and ramps and exit passageways shall also comply with Sections 713.7, 1023.4 and 1024.5, respectively.

Exceptions:

1. Openings shall not be limited to 156 square feet (15 m^2) where adjoining floor areas are equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.
2. Openings shall not be limited to 156 square feet (15 m^2) or an aggregate width of 25 percent of the length of the wall where the opening protective is a fire door serving enclosures for exit access stairways and ramps, and interior exit stairways and ramps.

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3. Openings shall not be limited to 156 square feet (15 m^2) or an aggregate width of 25 percent of the length of the wall where the opening protective has been tested in accordance with ASTM E119 or UL 263 and has a minimum fire-resistance rating not less than the fire-resistance rating of the wall.
4. Fire window assemblies permitted in atrium separation walls shall not be limited to a maximum aggregate width of 25 percent of the length of the wall.
5. Openings shall not be limited to 156 square feet (15 m^2) or an aggregate width of 25 percent of the length of the wall where the opening protective is a fire door assembly in a fire barrier separating an enclosure for exit access stairways and ramps, and interior exit stairways and ramps from an exit passageway in accordance with Section 1023.3.1.
6. Openings providing entrance to an elevator car shall not be limited to 156 square feet (15 m^2) or an aggregate width of 25 percent of the length of the wall where the opening protective is a fire door assembly in a fire barrier that is an elevator hoistway enclosure.
7. Openings shall not be limited to an aggregate width of 25 percent of the length of the wall where opening serves a shaft enclosure in accordance with Section 713.
8. Openings shall not be limited to an aggregate width of 25 percent of the length of the wall where opening serves a chute access room in accordance with Section 713.13.3 or a chute discharge room in accordance with Section 713.13.4.

707.7 Penetrations. Penetrations of fire barriers shall comply with Section 714.

707.7.1 Prohibited penetrations. Penetrations into enclosures for shafts, interior exit stairways and ramps, and exit passageways shall be allowed only where permitted by Sections 713.8.1, 1023.5 and 1024.6, respectively.

707.8 Joints. Joints made in or between fire barriers, and joints made at the intersection of fire barriers with the underside of a fire-resistance-rated floor or roof sheathing, slab or deck above, and with other fire-resistance-rated wall assemblies shall comply with Section 715.

707.9 Voids at intersections. The voids created at the intersection of a fire barrier and a nonfire-resistance-rated roof assembly or a nonfire-resistance-rated exterior wall assembly shall comply with Section 715.

707.10 Ducts and air transfer openings. Penetrations in a fire barrier by ducts and air transfer openings shall comply with Section 717.

SECTION 708—FIRE PARTITIONS

708.1 General. The following wall assemblies shall comply with this section:

1. Separation walls as required by Section 420.2 for Group R occupancies.
2. Walls separating tenant spaces in covered and open mall buildings as required by Section 402.4.2.1.
3. Corridor walls as required by Section 1020.2 *and in Group I-2 as required by Section 407.3.*
4. Enclosed elevator lobby separation as required by Section 3006.3.
5. Egress balconies as required by Section 1021.2
6. Walls separating ambulatory care facilities from adjacent spaces, corridors or tenants as required by Section 422.2.
7. Walls separating dwelling and sleeping units in Groups R-1 and R-2 in accordance with Sections 907.2.8.1 and 907.2.9.1.
8. Vestibules in accordance with Section 1028.2.
9. *Walls separating enclosed tenant spaces in high-rise buildings and in buildings of Types I, IIA, IIIA, IV or VA construction of Group A, E, H, I, L and R-2.1 occupancies and other applications listed in Section 1.11 regulated by the Office of the State Fire Marshal.*

708.2 Materials. The walls shall be of materials permitted by the building type of construction.

708.3 Fire-resistance rating. Fire partitions shall have a fire-resistance rating of not less than 1 hour.

Exceptions:

1. Corridor walls permitted to have a $^1/_2$-hour fire-resistance rating by Table 1020.2.
2. Dwelling unit and sleeping unit separations in buildings of Types IIB, IIIB and VB construction shall have fire-resistance ratings of not less than $^1/_2$ hour in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.
3. *Walls separating enclosed tenant spaces in Group B high-rise buildings of Type I and II construction equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.*

708.4 Continuity. Fire partitions shall extend from the top of the foundation or floor/ceiling assembly below and be securely attached to one of the following:

1. The underside of the floor or roof sheathing, deck or slab above.
2. The underside of a floor/ceiling or roof/ceiling assembly having a fire-resistance rating that is not less than the fire-resistance rating of the fire partition.

Exceptions:

1. Fire partitions shall not be required to extend into a crawl space below where the floor above the crawl space has a minimum 1-hour fire-resistance rating.

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2. Fire partitions serving as a corridor wall shall not be required to extend above the lower membrane of a corridor ceiling provided that the corridor ceiling membrane is equivalent to corridor wall membrane, and either of the following conditions is met:
    2.1. The room-side membrane of the corridor wall extends to the underside of the floor or roof sheathing, deck or slab of a fire-resistance-rated floor or roof above.
    2.2. The building is equipped with an automatic sprinkler system installed throughout in accordance with Section 903.3.1.1 or 903.3.1.2, including automatic sprinklers installed in the space between the top of the fire partition and underside of the floor or roof sheathing, deck or slab above.
3. Fire partitions serving as a corridor wall shall be permitted to terminate at the upper membrane of the corridor ceiling assembly where the corridor ceiling is constructed as required for the corridor wall.
4. Fire partitions separating tenant spaces in a covered or open mall building complying with Section 402.4.2.1 shall not be required to extend above the underside of a ceiling. Such ceiling shall not be required to be part of a fire-resistance-rated assembly, and the attic or space above the ceiling at tenant separation walls shall not be required to be subdivided by fire partitions.

708.4.1 Fire partition walls enclosing elevator lobbies. Fire partition walls used to enclose elevator lobbies in accordance with Section 3006.3 shall form an enclosure that terminates at a fire barrier or fire partition having a fire-resistance rating of not less than 1 hour, or an outside wall.

708.4.2 Supporting construction. The supporting construction for a fire partition shall have a fire-resistance rating that is equal to or greater than the required fire-resistance rating of the supported fire partition.

Exception: In buildings of Types IIB, IIIB and VB construction, the supporting construction requirement shall not apply to fire partitions separating tenant spaces in covered and open mall buildings, fire partitions separating dwelling units, fire partitions separating sleeping units, fire partitions serving as corridor walls, fire partitions separating ambulatory care facilities from adjacent spaces or corridors, fire partitions separating dwelling and sleeping units from Group R-1 and R-2 occupancies and fire partitions separating vestibules from the level of exit discharge.

708.4.3 Fireblocks and draftstops in combustible construction. In combustible construction where fire partitions do not extend to the underside of the floor or roof sheathing, deck or slab above, the space above and along the line of the fire partition shall be provided with one of the following:

1. Fireblocking up to the underside of the floor or roof sheathing, deck or slab above using materials complying with Section 718.2.1.
2. Draftstops up to the underside of the floor or roof sheathing, deck or slab above using materials complying with Section 718.3.1 for floors or Section 718.4.1 for attics.

Exceptions:

1. Buildings equipped with an automatic sprinkler system installed throughout in accordance with Section 903.3.1.1, or in accordance with Section 903.3.1.2 provided that protection is provided in the space between the top of the fire partition and underside of the floor or roof sheathing, deck or slab above as required for systems complying with Section 903.3.1.1.
2. Where corridor walls provide a sleeping unit or dwelling unit separation, draftstops shall only be required above one of the corridor walls.
3. In Group R-2 occupancies with fewer than four dwelling units, fireblocking and draftstops shall not be required.
4. In Group R-2 occupancies up to and including four stories in height in buildings not exceeding 60 feet (18 288 mm) in height above grade plane, the attic space shall be subdivided by draftstops into areas not exceeding 3,000 square feet (279 m^2) or above every two dwelling units, whichever is smaller.
5. In Group R-3 occupancies with fewer than three dwelling units, fireblocking and draftstops shall not be required in floor assemblies.

708.5 Exterior walls. Where exterior walls serve as a part of a required fire-resistance-rated separation, such walls shall comply with the requirements of Section 705 for exterior walls, and the fire-resistance-rated separation requirements shall not apply.

Exception: Exterior walls required to be fire-resistance rated in accordance with Section 1021.2 for exterior egress balconies, Section 1023.7 for interior exit stairways and ramps and Section 1027.6 for exterior exit stairways and ramps.

708.6 Openings. Openings in a fire partition shall be protected in accordance with Section 716.

708.7 Penetrations. Penetrations of fire partitions shall comply with Section 714.

708.8 Joints. Joints made in or between fire partitions shall comply with Section 715.

708.9 Ducts and air transfer openings. Penetrations in a fire partition by ducts and air transfer openings shall comply with Section 717.

SECTION 709—SMOKE BARRIERS

709.1 General. Vertical and horizontal smoke barriers shall comply with this section.

709.2 Materials. Smoke barriers shall be of materials permitted by the building type of construction.

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709.3 Fire-resistance rating. A 1-hour fire-resistance rating is required for smoke barriers.

➡ **709.4 Continuity.** Smoke barriers shall form an effective membrane continuous from the top of the foundation or floor/ceiling assembly below to the underside of the floor or roof sheathing, deck or slab above, including continuity through concealed spaces, such as those found above suspended ceilings, and interstitial structural and mechanical spaces. The supporting construction shall be protected to afford the required fire-resistance rating of the wall or floor supported in buildings of other than Type IIB, IIIB or VB construction. Smoke-barrier walls used to separate smoke compartments shall comply with Section 709.4.1. Smoke-barrier walls used to enclose areas of refuge in accordance with Section 1009.6.4 or to enclose elevator lobbies in accordance with Section 405.4.3, 3007.6.2, or 3008.6.2 shall comply with Section 709.4.2.

Exception: Smoke-barrier walls are not required in interstitial spaces where such spaces are designed and constructed with ceilings or exterior walls that provide resistance to the passage of fire and smoke equivalent to that provided by the smoke-barrier walls.

709.4.1 Smoke-barrier assemblies separating smoke compartments. Smoke-barrier assemblies used to separate smoke compartments shall form an effective membrane enclosure that is continuous from an outside wall or smoke barrier wall to an outside wall or another smoke barrier wall and to the horizontal assemblies.

709.4.2 Smoke-barrier walls enclosing areas of refuge or elevator lobbies. Smoke-barrier walls used to enclose areas of refuge in accordance with Section 1009.6.4, or to enclose elevator lobbies in accordance with Section 405.4.3, 3007.6.2, or 3008.6.2, shall form an effective membrane enclosure that terminates at a fire barrier wall having a fire resistance rating not less than 1 hour, another smoke barrier wall or an outside wall. A smoke and draft control door assembly as specified in Section 716.2.2.1.1 shall not be required at each elevator hoistway door where protected by an elevator lobby, at each exit door opening into a protected lobby or at each exit doorway between an area of refuge and the exit enclosure.

709.5 Openings. Openings in a smoke barrier shall be protected in accordance with Section 716.

Exceptions:

1. In Group I-*2, R-2.1* and ambulatory care facilities, where a pair of opposite-swinging doors are installed across a corridor in accordance with Section 709.5.1, the doors shall not be required to be protected in accordance with Section 716. The doors shall be close fitting within operational tolerances, and shall not have a center mullion or undercuts in excess of $^3/_4$ inch (19.1 mm), louvers or grilles. The doors shall have head and jamb stops, and astragals or rabbets at meeting edges. Positive latching devices are not required. Factory-applied or field-applied protective plates are not required to be labeled. *Doors installed across corridors shall comply with Section 1010.1.1.*
2. In Group I-*2, R-2.1* and ambulatory care facilities, special purpose horizontal sliding, accordion or folding doors installed in accordance with Section 1010.3.3 and protected in accordance with Section 716. *Doors installed across corridors shall comply with Section 1010.1.1.*

709.5.1 Group I-2, *R-2.1* and ambulatory care facilities. In Group I-2, *R-2.1* and ambulatory care facilities, where doors protecting openings in smoke barriers are installed across a corridor and have hold-open devices, the doors shall be automatic-closing in accordance with Section 716.2.6.6. Such doors shall have a vision panel with fire-protection-rated glazing materials in fire-protection-rated frames, the area of which shall not exceed that tested. *In Group I-2, where swinging doors are installed across a corridor, such doors shall be opposite swinging pairs.*

709.6 Penetrations. Penetrations of smoke barriers shall comply with Section 714.

709.7 Joints. Joints made in or between smoke barriers shall comply with Section 715.

709.8 Ducts and air transfer openings. Penetrations in a smoke barrier by ducts and air transfer openings shall comply with Section 717.

SECTION 710—SMOKE PARTITIONS

710.1 General. Smoke partitions installed as required elsewhere in the code shall comply with this section.

710.2 Materials. The walls shall be of materials permitted by the building type of construction. *In Group I-2, smoke partitions shall have framing covered with noncombustible materials having an approved thermal barrier with an index of not less than 15 in accordance with FM 4880, UL 1040, NFPA 286 or UL 1715.*

710.3 Fire-resistance rating. Unless required elsewhere in the code, smoke partitions are not required to have a fire-resistance rating.

710.4 Continuity. Smoke partitions shall extend from the top of the foundation or floor below to the underside of the floor or roof sheathing, deck or slab above or to the underside of the ceiling above where the ceiling membrane is constructed to limit the transfer of smoke.

Exception: In Group I-2, a lay-in ceiling system shall be considered capable of limiting the transfer of smoke where the ceiling tiles weigh not less than 1 pound per square foot (4.882 kg/m^2) and where the HVAC system is fully ducted in accordance with the *California Mechanical Code.*

710.4.1 Smoke partition walls enclosing elevator lobbies. Smoke partition walls used to enclose elevator lobbies in accordance with Section 3006.3 shall form an enclosure that terminates at a fire barrier having a fire-resistance rating of not less than 1 hour, another smoke partition or an outside wall.

710.5 Openings. Openings in smoke partitions shall comply with Sections 710.5.1 through 710.5.3.

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710.5.1 Windows. Windows in smoke partitions shall be sealed to resist the free passage of smoke or be automatic-closing upon detection of smoke.

710.5.2 Doors. Doors in smoke partitions shall comply with Sections 710.5.2.1 through 710.5.2.3.

710.5.2.1 Louvers. Doors in smoke partitions shall not include louvers.

Exception: Where permitted in accordance with Section 407.3.1.1.

710.5.2.2 Smoke and draft control doors. Where required elsewhere in the code, doors in smoke partitions shall meet the requirements for a smoke and draft control door assembly tested in accordance with UL 1784. The air leakage rate of the door assembly shall not exceed 3.0 cubic feet per minute per square foot [0.015424 $m^3/(s \times m^2)$] of door opening at 0.10 inch of water (25 Pa) for both the ambient temperature test and the elevated temperature exposure test. Installation of smoke doors shall be in accordance with NFPA 105.

710.5.2.2.1 Smoke and draft control door labeling. Smoke and draft control doors complying only with UL 1784 shall be permitted to show the letter "S" on the manufacturer's labeling.

710.5.2.3 Self- or automatic-closing doors. Where required elsewhere in the code, doors in smoke partitions shall be self- or automatic-closing by smoke detection in accordance with Section 716.2.6.6.

710.5.3 Pass-through openings in Group I-2. Where pass-through openings are provided in smoke partitions in Group I-2 occupancies, such openings shall comply with the following: ⬅

1. The smoke compartment in which the pass-through openings occur does not contain a patient care suite or sleeping room.
2. Pass-through openings are installed in a wall, door or vision panel that is not required to have a fire-resistance rating.
3. The top of the pass-through opening is located a maximum of 48 inches (1219 mm) above the floor.
4. The aggregate area of all such pass-through openings within a single room shall not exceed 80 square inches (0.05 m^2).

710.6 Penetrations. The space around penetrating items shall be filled with an approved material to limit the free passage of smoke.

710.7 Joints. Joints shall be filled with an approved material to limit the free passage of smoke.

710.8 Ducts and air transfer openings. The space around a duct penetrating a smoke partition shall be filled with an approved material to limit the free passage of smoke. Air transfer openings in smoke partitions shall be provided with a smoke damper complying with Section 717.3.2.2. *For Group A, E, H, I, L and R occupancies, high-rise buildings, and other applications listed in Section 1.11 regulated by the Office of the State Fire Marshal, duct openings in smoke partitions shall also be provided with a smoke damper complying with Section 717.3.2.2.*

Exceptions:

1. Where the installation of a smoke damper will interfere with the operation of a required smoke control system in accordance with Section 909, approved alternative protection shall be utilized.
2. *[SFM] Smoke dampers are not required in corridor penetrations where the duct is constructed of steel not less than 0.019-inch (0.40 mm) in thickness and there are no openings serving the corridor.*

SECTION 711—FLOOR AND ROOF ASSEMBLIES

711.1 General. Horizontal assemblies shall comply with Section 711.2. Nonfire-resistance-rated floor and roof assemblies shall comply with Section 711.3.

711.2 Horizontal assemblies. Horizontal assemblies shall comply with Sections 711.2.1 through 711.2.6.

711.2.1 Materials. Assemblies shall be of materials permitted by the building type of construction.

711.2.2 Continuity. Assemblies shall be continuous without vertical openings, except as permitted by this section and Section 712.

711.2.3 Supporting construction. The supporting construction shall be protected to afford the required fire-resistance rating of the horizontal assembly supported.

Exception: In buildings of Type IIB, IIIB or VB construction, the construction supporting the horizontal assembly is not required to be fire-resistance rated at the following:

1. Horizontal assemblies at the separations of incidental uses as specified by Table 509.1 provided that the required fire-resistance rating does not exceed 1 hour.
2. Horizontal assemblies at the separations of dwelling units and sleeping units as required by Section 420.3.
3. Horizontal assemblies at smoke barriers constructed in accordance with Section 709.

711.2.4 Fire-resistance rating. The fire-resistance rating of horizontal assemblies shall comply with Sections 711.2.4.1 through 711.2.4.6 but shall be not less than that required by the building type of construction.

711.2.4.1 Separating mixed occupancies. Where the horizontal assembly separates mixed occupancies, the assembly shall have a fire-resistance rating of not less than that required by Section 508.4 based on the occupancies being separated.

711.2.4.2 Separating fire areas. Where the horizontal assembly separates a single occupancy into different fire areas, the assembly shall have a fire-resistance rating of not less than that required by Section 707.3.10.

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711.2.4.3 Dwelling units and sleeping units. Horizontal assemblies serving as dwelling or sleeping unit separations in accordance with Section 420.3 shall be not less than 1-hour fire-resistance-rated construction.

Exception: Horizontal assemblies separating dwelling units and sleeping units shall be not less than $^1/_2$-hour fire-resistance-rated construction in a building of Types IIB, IIIB and VB construction, where the building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.

711.2.4.4 Separating smoke compartments. Where the horizontal assembly is required to be a smoke barrier, the assembly shall comply with Section 709.

711.2.4.5 Separating incidental uses. Where the horizontal assembly separates incidental uses from the remainder of the building, the assembly shall have a fire-resistance rating of not less than that required by Section 509.

711.2.4.6 Other separations. Where a horizontal assembly is required by other sections of this code, the assembly shall have a fire-resistance rating of not less than that required by that section.

711.2.5 Ceiling panels. Where the weight of lay-in ceiling panels, used as part of fire-resistance-rated floor/ceiling or roof/ceiling assemblies, is not adequate to resist an upward force of 1 pound per square foot (48 Pa), wire or other approved devices shall be installed above the panels to prevent vertical displacement under such upward force.

711.2.6 Unusable space. In 1-hour fire-resistance-rated floor/ceiling assemblies, the ceiling membrane is not required to be installed over unusable crawl spaces. In 1-hour fire-resistance-rated roof assemblies, the floor membrane is not required to be installed where unusable attic space occurs above.

711.3 Nonfire-resistance-rated floor and roof assemblies. Nonfire-resistance-rated floor, floor/ceiling, roof and roof/ceiling assemblies shall comply with Sections 711.3.1 and 711.3.2.

711.3.1 Materials. Assemblies shall be of materials permitted by the building type of construction.

711.3.2 Continuity. Assemblies shall be continuous without vertical openings, except as permitted by Section 712.

SECTION 712—VERTICAL OPENINGS

712.1 General. Each vertical opening shall comply in accordance with one of the protection methods in Sections 712.1.1 through 712.1.16.

712.1.1 Shaft enclosures. Vertical openings contained entirely within a shaft enclosure complying with Section 713 shall be permitted.

712.1.2 Individual dwelling unit. Unconcealed vertical openings totally within an individual residential dwelling unit and connecting four stories or less shall be permitted.

712.1.3 Escalator openings. Where a building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1, vertical openings for escalators shall be permitted where protected in accordance with Section 712.1.3.1 or 712.1.3.2.

712.1.3.1 Opening size. Protection by a draft curtain and closely spaced sprinklers in accordance with NFPA 13 shall be permitted where the area of the vertical opening between stories does not exceed twice the horizontal projected area of the escalator. In other than Groups B and M, this application is limited to openings that do not connect more than four stories.

712.1.3.2 Automatic shutters. Protection of the vertical opening by listed or approved shutters at every penetrated floor shall be permitted in accordance with all of the following:

1. The shutter shall be installed in accordance with the manufacturer's instructions.
2. The shutter shall be of noncombustible construction and have a fire-resistance rating of not less than 1.5 hours.
3. The shutter shall close immediately upon the actuation of a smoke detector installed in accordance with Section 907.3.
4. The shutter shall completely close off the vertical opening.
5. Escalators shall cease operation when the shutter begins to close.
6. The shutter shall operate at a speed of not more than 30 feet per minute (152.4 mm/s).
7. The shutter shall be equipped with a sensing leading edge to stop closure where in contact with any obstacle, and continue to close when the obstacle is cleared.

712.1.4 Penetrations. Penetrations, concealed and unconcealed, shall be permitted where protected in accordance with Section 714.

712.1.5 Joints. Joints shall be permitted where complying with Section 712.1.5.1 or 712.1.5.2, as applicable.

712.1.5.1 Joints in or between horizontal assemblies. Joints made in or between horizontal assemblies shall comply with Section 715. The void created at the intersection of a floor/ceiling assembly and an exterior curtain wall assembly shall be permitted where protected in accordance with Section 715.4.

712.1.5.2 Joints in or between nonfire-resistance-rated floor assemblies. Joints in or between floor assemblies without a required fire-resistance rating shall be permitted where they comply with one of the following:

1. The joint shall be concealed within the cavity of a wall.
2. The joint shall be located above a ceiling.

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3. The joint shall be sealed, treated or covered with an approved material or system to resist the free passage of flame and the products of combustion.

Exception: Joints meeting one of the exceptions specified in Section 715.3.

712.1.6 Ducts and air transfer openings. Penetrations by ducts and air transfer openings shall be protected in accordance with Section 717. Grease ducts shall be protected in accordance with the *California Mechanical Code.*

712.1.7 Atriums. Atriums complying with Section 404 that connect two or more stories in Group I-2 or I-3 occupancies or three or more stories in other occupancies shall be permitted.

Exceptions:

1. Atriums shall not be permitted within Group H occupancies.
2. Balconies or stories within Groups A-1, A-4 and A-5 and mezzanines that comply with Section 505 shall not be considered a story as it applies to this section

712.1.8 Masonry chimney. Approved vertical openings for masonry chimneys shall be permitted where the annular space is fireblocked at each floor level in accordance with Section 718.2.5.

712.1.9 Two-story openings. In other than Groups I-2 and I-3, a vertical opening that is not used as one of the applications specified in this section shall be permitted if the opening complies with all of the following items:

1. Does not connect more than two stories.
2. Does not penetrate a horizontal assembly that separates fire areas or smoke barriers that separate smoke compartments.
3. Is not concealed within the construction of a wall or a floor/ceiling assembly.
4. Is not open to a corridor in Group I and R occupancies.
5. Is not open to a corridor on nonsprinklered floors.
6. Is separated from floor openings and air transfer openings serving other floors by construction conforming to required shaft enclosures.

712.1.10 Parking garages. Vertical openings in parking garages for automobile ramps, elevators and duct systems shall comply with Section 712.1.10.1, 712.1.10.2 or 712.1.10.3, as applicable.

712.1.10.1 Automobile ramps. Vertical openings for automobile ramps in parking garages shall be permitted where constructed in accordance with Sections 406.5 and 406.6.

712.1.10.2 Elevators. Vertical openings for elevator hoistways in parking garages that serve only the parking garage, and complying with Sections 406.5 and 406.6, respectively, shall be permitted.

712.1.10.3 Duct systems. Vertical openings for mechanical exhaust or supply duct systems in parking garages complying with Sections 406.5 and 406.6, respectively, shall be permitted to be unenclosed where such duct system is contained within and serves only the parking garage.

712.1.11 Mezzanine. Vertical openings between a mezzanine complying with Section 505 and the floor below shall be permitted.

712.1.12 Exit access stairways and ramps. Vertical openings containing exit access stairways or ramps in accordance with Section 1019 shall be permitted.

712.1.13 Openings. Vertical openings for floor fire doors and access doors shall be permitted where protected by Section 712.1.13.1 or 712.1.13.2.

712.1.13.1 Horizontal fire door assemblies. Horizontal fire door assemblies used to protect openings in fire-resistance-rated horizontal assemblies shall be tested in accordance with NFPA 288, and shall achieve a fire-resistance rating not less than the assembly being penetrated. Horizontal fire door assemblies shall be labeled by an approved agency. The label shall be permanently affixed and shall specify the manufacturer, the test standard and the fire-resistance rating.

712.1.13.2 Access doors. Access doors shall be permitted in ceilings of fire-resistance-rated floor/ceiling and roof/ceiling assemblies, provided that such doors are tested in accordance with ASTM E119 or UL 263 as horizontal assemblies and labeled by an approved agency for such purpose.

712.1.14 Group I-3. In Group I-3 occupancies, vertical openings shall be permitted in accordance with Section 408.5.

712.1.15 Skylights. Skylights and other penetrations through a fire-resistance-rated roof deck or slab are permitted to be unprotected, provided that the structural integrity of the fire-resistance-rated roof assembly is maintained. Unprotected skylights shall not be permitted in roof assemblies required to be fire-resistance rated in accordance with Section 705.9.6. The supporting construction shall be protected to afford the required fire-resistance rating of the horizontal assembly supported.

712.1.16 Openings otherwise permitted. Vertical openings shall be permitted where allowed by other sections of this code.

SECTION 713—SHAFT ENCLOSURES

713.1 General. The provisions of this section shall apply to shafts required to protect openings and penetrations through floor/ceiling and roof/ceiling assemblies. Interior exit stairways and ramps shall be enclosed in accordance with Section 1023.

713.2 Construction. Shaft enclosures shall be constructed as fire barriers in accordance with Section 707 or horizontal assemblies in accordance with Section 711, or both.

713.3 Materials. Shaft enclosures shall be of materials permitted by the building type of construction.

713.4 Fire-resistance rating. Shaft enclosures shall have a fire-resistance rating of not less than 2 hours where connecting four stories or more, and not less than 1 hour where connecting less than four stories. The number of stories connected by the shaft enclosure shall include any basements but not any mezzanines. Shaft enclosures shall have a fire-resistance rating not less than the floor assembly penetrated, but need not exceed 2 hours. Shaft enclosures shall meet the requirements of Section 703.2.1.1.

Exception: Shafts having a reduced fire-resistance rating in high-rise buildings in accordance with Section 403.2.1.2.

713.5 Continuity. Shaft enclosures shall be constructed as fire barriers in accordance with Section 707 or horizontal assemblies constructed in accordance with Section 711, or both, and shall have continuity in accordance with Section 707.5 for fire barriers or Section 711.2.2 for horizontal assemblies, as applicable.

713.6 Exterior walls. Where exterior walls serve as a part of a required shaft enclosure, such walls shall comply with the requirements of Section 705 for exterior walls and the fire-resistance-rated enclosure requirements shall not apply.

Exception: Exterior walls required to be fire-resistance rated in accordance with Section 1021.2 for exterior egress balconies, Section 1023.7 for interior exit stairways and ramps and Section 1027.6 for exterior exit stairways and ramps.

713.7 Openings. Openings in a shaft enclosure shall be protected in accordance with Section 716 as required for fire barriers. Doors shall be self- or automatic-closing by smoke detection in accordance with Section 716.2.6.6.

713.7.1 Prohibited openings. Openings other than those necessary for the purpose of the shaft shall not be permitted in shaft enclosures.

713.8 Penetrations. Penetrations in a shaft enclosure shall be protected in accordance with Section 714 as required for fire barriers or horizontal assemblies or both. Structural elements, such as beams or joists, where protected in accordance with Section 714 shall be permitted to penetrate a shaft enclosure.

713.8.1 Prohibited penetrations. Penetrations other than those necessary for the purpose of the shaft shall not be permitted in shaft enclosures.

Exception: Membrane penetrations shall be permitted on the outside of shaft enclosures. Such penetrations shall be protected in accordance with Section 714.4.2.

713.9 Joints. Joints in a shaft enclosure shall comply with Section 715.

713.10 Duct and air transfer openings. Penetrations of a shaft enclosure by ducts and air transfer openings shall comply with Section 717.

713.11 Enclosure at the bottom. Shafts that do not extend to the bottom of the building or structure shall comply with one of the following:

1. Be enclosed at the lowest level with construction of the same fire-resistance rating as the lowest floor through which the shaft passes, but not less than the rating required for the shaft enclosure.
2. Terminate in a room having a use related to the purpose of the shaft. The room shall be separated from the remainder of the building by fire barriers constructed in accordance with Section 707 or horizontal assemblies constructed in accordance with Section 711, or both. The fire-resistance rating and opening protectives shall be not less than the protection required for the shaft enclosure.
3. Be protected by approved fire dampers installed in accordance with their listing at the lowest floor level within the shaft enclosure.

Exceptions:

1. The fire-resistance-rated room separation is not required, provided that the only openings in or penetrations of the shaft enclosure to the interior of the building occur at the bottom. The bottom of the shaft shall be closed off around the penetrating items with materials permitted by Section 718.3.1 for draftstops, or the room shall be provided with an approved automatic sprinkler system.
2. A shaft enclosure containing a waste or linen chute shall not be used for any other purpose and shall discharge in a room protected in accordance with Section 713.13.4.
3. The fire-resistance-rated room separation and the protection at the bottom of the shaft are not required provided that there are no combustibles in the shaft and there are no openings or other penetrations through the shaft enclosure to the interior of the building.

713.12 Enclosure at top. The top of shaft enclosures shall comply with one of the following:

1. Extend to the underside of the roof sheathing, deck or slab of the building, and the roof assembly shall comply with the requirements for the type of construction as specified in Table 601.
2. Terminate below the roof assembly and be enclosed at the top with construction of the same fire-resistance rating as the topmost floor penetrated by the shaft, but not less than the fire-resistance rating required for the shaft enclosure.
3. Extend past the roof assembly and comply with the requirements of Section 1511.

713.12.1 Penthouse mechanical rooms. A fire/smoke damper shall not be required at the penetration of the rooftop structure where shaft enclosures extend up through the roof assembly into a rooftop structure conforming to Section 1511. Ductwork in the shaft shall be connected directly to HVAC equipment.

713.13 Waste, recycling and linen chutes and incinerator rooms. Waste, recycling and linen chutes shall comply with the provisions of NFPA 82, Chapter 6 and shall meet the requirements of Sections 712 and 713.13.1 through 713.13.6. Incinerator rooms shall meet the provisions of Sections 713.13.4 and 713.13.5.

Exception: Chutes serving and contained within a single dwelling unit.

713.13.1 Waste, recycling and linen chute enclosures. A shaft enclosure containing a recycling, waste or linen chute shall not be used for any other purpose and shall be enclosed in accordance with Section 713.4. A shaft enclosure shall be permitted to contain recycling and waste chutes. Openings into the shaft, from access rooms and discharge rooms, shall be protected in accordance with this section and Section 716. Openings into chutes shall not be located in corridors. Doors into chutes shall be self-closing. Discharge doors shall be self-or automatic-closing upon the actuation of a smoke detector in accordance with Section 716.2.6.6, except that heat-activated closing devices shall be permitted between the shaft and the discharge room.

713.13.2 Materials. A shaft enclosure containing a waste, recycling, or linen chute shall be constructed of materials as permitted by the building type of construction.

713.13.3 Chute access rooms. Access openings for waste, recycling or linen chutes shall be located in rooms or compartments enclosed by not less than 1-hour fire barriers constructed in accordance with Section 707 or horizontal assemblies constructed in accordance with Section 711, or both. Openings into the access rooms shall be protected by opening protectives having a fire protection rating of not less than $^3/_4$ hour. Doors shall be self- or automatic-closing upon the detection of smoke in accordance with Section 716.2.6.6. The room or compartment shall be configured to allow the access door to the room or compartment to close and latch with the access panel to the chute in any position.

713.13.4 Chute discharge room. Waste, recycling or linen chutes shall discharge into an enclosed room separated by fire barriers with a fire-resistance rating not less than the required fire rating of the shaft enclosure and constructed in accordance with Section 707 or horizontal assemblies constructed in accordance with Section 711, or both. Openings into the discharge room from the remainder of the building shall be protected by opening protectives having a fire protection rating based on the fire rating of the shaft enclosure in accordance with Tables 716.1(2) and 716.1(3). Doors shall be self- or automatic-closing upon the detection of smoke in accordance with Section 716.2.6.6. Waste chutes shall not terminate in an incinerator room. Waste and linen rooms that are not provided with chutes need only comply with Table 509.1.

713.13.5 Incinerator room. Incinerator rooms shall comply with Table 509.1.

713.13.6 Automatic sprinkler system. An approved automatic sprinkler system shall be installed in accordance with Section 903.2.11.2.

713.14 Elevator, dumbwaiter and other hoistways. A hoistway for elevators, dumbwaiters and other vertical devices shall comply with Section 712. Where the hoistway is required to be enclosed, it shall be constructed as a shaft enclosure in accordance with Section 713 and Chapter 30.

SECTION 714—PENETRATIONS

714.1 Scope. The provisions of this section shall govern the materials and methods of construction used to protect through penetrations and membrane penetrations of horizontal assemblies and fire-resistance-rated wall assemblies.

714.1.1 Ducts and air transfer openings. Penetrations of fire-resistance-rated walls by ducts that are not protected with dampers shall comply with Sections 714.3 through 714.4.3. Penetrations of horizontal assemblies not protected with a shaft as permitted by Section 717.6, and not required to be protected with fire dampers by other sections of this code, shall comply with Sections 714.5 through 714.6.2. Ducts and air transfer openings that are protected with dampers shall comply with Section 717.

714.2 Installation. A listed penetration firestop system shall be installed in accordance with the manufacturer's installation instructions and the listing criteria.

714.3 Sleeves. Where sleeves are used, they shall be securely fastened to the assembly penetrated and installed in accordance with the sleeve manufacturer's installation instructions. Where listed systems are used, the sleeve shall be installed in accordance with the listing criteria for the system. The space between the item contained in the sleeve and the sleeve itself and any space between the sleeve and the assembly penetrated shall be protected in accordance with this section. Insulation and coverings on or in the penetrating item shall not penetrate the assembly unless the specific material used has been tested as part of the assembly in accordance with this section.

714.4 Fire-resistance-rated walls. Penetrations into or through fire walls, fire barriers, smoke barrier walls and fire partitions shall comply with Sections 714.4.1 through 714.4.3. Penetrations in smoke barrier walls shall also comply with Section 714.5.4.

714.4.1 Through penetrations. Through penetrations of fire-resistance-rated walls shall comply with Section 714.4.1.1 or 714.4.1.2.

Exception: Where the penetrating items are steel, ferrous or copper pipes, tubes or conduits, the annular space between the penetrating item and the fire-resistance-rated wall is permitted to be protected by either of the following measures:

1. In concrete or masonry walls where the penetrating item is a maximum 6-inch (152 mm) nominal diameter and the area of the opening through the wall does not exceed 144 square inches (0.0929 m^2), concrete, grout or mortar is permitted where installed the full thickness of the wall or the thickness required to maintain the fire-resistance rating.
2. The material used to fill the annular space shall prevent the passage of flame and hot gases sufficient to ignite cotton waste when subjected to ASTM E119 or UL 263 time-temperature fire conditions under a minimum positive pressure

differential of 0.01 inch of water (2.49 Pa) at the location of the penetration for the time period equivalent to the fire-resistance rating of the construction penetrated.

714.4.1.1 Fire-resistance-rated assemblies. Through penetrations shall be protected using systems installed as tested in the approved fire-resistance-rated assembly.

714.4.1.2 Through-penetration firestop system. Through penetrations shall be protected by an approved penetration firestop system installed as tested in accordance with ASTM E814 or UL 1479, with a minimum positive pressure differential of 0.01 inch of water (2.49 Pa) and shall have an F rating of not less than the required fire-resistance rating of the wall penetrated.

714.4.2 Membrane penetrations. Membrane penetrations shall comply with Section 714.4.1. Where walls or partitions are required to have a fire-resistance rating, recessed fixtures shall be installed such that the required fire resistance will not be reduced.

Exceptions:

1. Membrane penetrations of maximum 2-hour fire-resistance-rated walls and partitions by steel electrical boxes that do not exceed 16 square inches (0.0 103 m^2) in area, provided that the aggregate area of the openings through the membrane does not exceed 100 square inches (0.0645 m^2) in any 100 square feet (9.29 m^2) of wall area. The annular space between the wall membrane and the box shall not exceed $^1/_8$ inch (3.2 mm). Such boxes on opposite sides of the wall or partition shall be separated by one of the following:
    1.1. By a horizontal distance of not less than 24 inches (610 mm) where the wall or partition is constructed with individual noncommunicating stud cavities.
    1.2. By a horizontal distance of not less than the depth of the wall cavity where the wall cavity is filled with cellulose loose-fill, rockwool or slag mineral wool insulation.
    1.3. By solid fireblocking in accordance with Section 718.2.1.
    1.4. By protecting both outlet boxes with listed putty pads.
    1.5. By other listed materials and methods.
2. Membrane penetrations by listed electrical boxes of any material, provided that such boxes have been tested for use in fire-resistance-rated assemblies and are installed in accordance with the instructions included in the listing. The annular space between the wall membrane and the box shall not exceed $^1/_8$ inch (3.2 mm) unless listed otherwise. Such boxes on opposite sides of the wall or partition shall be separated by one of the following:
    2.1. By the horizontal distance specified in the listing of the electrical boxes.
    2.2. By solid fireblocking in accordance with Section 718.2.1.
    2.3. By protecting both boxes with listed putty pads.
    2.4. By other listed materials and methods.
3. Membrane penetrations by electrical boxes of any size or type, that have been listed as part of a wall opening protective material system for use in fire-resistance-rated assemblies and are installed in accordance with the instructions included in the listing.
4. Membrane penetrations by boxes other than electrical boxes, provided that such penetrating items and the annular space between the wall membrane and the box, are protected by an approved membrane penetration firestop system installed as tested in accordance with ASTM E814 or UL 1479, with a minimum positive pressure differential of 0.01 inch of water (2.49 Pa), and shall have an F and T rating of not less than the required fire-resistance rating of the wall penetrated and be installed in accordance with their listing.
5. The annular space created by the penetration of an automatic sprinkler, provided that it is covered by a metal escutcheon plate.
6. Membrane penetrations of maximum 2-hour fire-resistance-rated walls and partitions by steel electrical boxes that exceed 16 square inches (0.0 103 m^2) in area, or steel electrical boxes of any size having an aggregate area through the membrane exceeding 100 square inches (0.0645 m^2) in any 100 square feet (9.29 m^2) of wall area, provided that such penetrating items are protected by listed putty pads or other listed materials and methods, and installed in accordance with the listing.

714.4.3 Dissimilar materials. Noncombustible penetrating items shall not connect to combustible items beyond the point of firestopping unless it can be demonstrated that the fire-resistance integrity of the wall is maintained.

714.5 Horizontal assemblies. Penetrations of a fire-resistance-rated floor, floor/ceiling assembly or the ceiling membrane of a roof/ceiling assembly not required to be enclosed in a shaft by Section 712.1 shall be protected in accordance with Sections 714.5.1 through 714.5.4.

714.5.1 Through penetrations. Through penetrations of horizontal assemblies shall comply with Section 714.5.1.1 or 714.5.1.2.

Exceptions:

1. Penetrations by steel, ferrous or copper conduits, pipes, tubes or vents or concrete or masonry items through a single fire-resistance-rated floor assembly where the annular space is protected with materials that prevent the passage of flame and hot gases sufficient to ignite cotton waste when subjected to ASTM E119 or UL 263 time-temperature fire conditions under a minimum positive pressure differential of 0.01 inch of water (2.49 Pa) at the location of the penetration for the time period equivalent to the fire-resistance rating of the construction penetrated. Penetrating items

with a maximum 6-inch (152 mm) nominal diameter shall not be limited to the penetration of a single fire-resistance-rated floor assembly, provided that the aggregate area of the openings through the assembly does not exceed 144 square inches (92 900 mm ^{2}) in any 100 square feet (9.3 m^2) of floor area.

2. Penetrations in a single concrete floor by steel, ferrous or copper conduits, pipes, tubes or vents with a maximum 6-inch (152 mm) nominal diameter, provided that the concrete, grout or mortar is installed the full thickness of the floor or the thickness required to maintain the fire-resistance rating. The penetrating items shall not be limited to the penetration of a single concrete floor, provided that the area of the opening through each floor does not exceed 144 square inches (92 900 mm^2).
3. Penetrations by listed electrical boxes of any material, provided that such boxes have been tested for use in fire-resistance-rated assemblies and installed in accordance with the instructions included in the listing.
4. Penetrations of concrete floors or ramps within parking garages or structures constructed in accordance with Sections 406.5 and 406.6 where the areas above and below the penetrations are parking areas.

714.5.1.1 Fire-resistance-rated assemblies. Through penetrations shall be protected using systems installed as tested in the approved fire-resistance-rated assembly.

714.5.1.2 Through-penetration firestop system. Through penetrations shall be protected by an approved through-penetration firestop system installed and tested in accordance with ASTM E814 or UL 1479, with a minimum positive pressure differential of 0.01 inch of water (2.49 Pa). The system shall have an F rating/T rating of not less than 1 hour but not less than the required rating of the floor penetrated.

Exceptions:

1. Floor penetrations contained and located within the cavity of a wall above the floor or below the floor do not require a T rating.
2. Floor penetrations by floor drains, tub drains or shower drains contained and located within the concealed space of a horizontal assembly do not require a T rating.
3. Floor penetrations of maximum 4-inch (102 mm) nominal diameter metal conduit or tubing penetrating directly into metal-enclosed electrical power switchgear do not require a T rating.
4. Penetrations in a single concrete floor by steel, ferrous or copper conduits, pipes, tubes or vents with a maximum 6-inch (152 mm) nominal diameter do not require a T rating. These penetrating items shall not be limited to the penetration of a single concrete floor, provided that the area of the opening through each floor does not exceed 144 square inches (92,900 mm^2).

714.5.2 Membrane penetrations. Penetrations of membranes that are part of a horizontal assembly shall comply with Section 714.5.1.1 or 714.5.1.2. Where floor/ceiling assemblies are required to have a fire-resistance rating, recessed fixtures shall be installed such that the required fire resistance will not be reduced.

Exceptions:

1. Membrane penetrations by steel, ferrous or copper conduits, pipes, tubes or vents, or concrete or masonry items where the annular space is protected either in accordance with Section 714.5.1 or to prevent the free passage of flame and the products of combustion. The aggregate area of the openings through the membrane shall not exceed 100 square inches (64 500 mm^2) in any 100 square feet (9.3 m^2) of ceiling area in assemblies tested without penetrations.
2. Ceiling membrane penetrations of maximum 2-hour horizontal assemblies by steel electrical boxes that do not exceed 16 square inches (10 323 mm ^{2}) in area, provided that the aggregate area of such penetrations does not exceed 100 square inches (44 500 mm^2) in any 100 square feet (9.29 m^2) of ceiling area, and the annular space between the ceiling membrane and the box does not exceed $^1/_8$ inch (3.2 mm).
3. Membrane penetrations by electrical boxes of any size or type, that have been listed as part of an opening protective material system for use in horizontal assemblies and are installed in accordance with the instructions included in the listing.
4. Membrane penetrations by listed electrical boxes of any material, provided that such boxes have been tested for use in fire-resistance-rated assemblies and are installed in accordance with the instructions included in the listing. The annular space between the ceiling membrane and the box shall not exceed $^1/_8$ inch (3.2 mm) unless listed otherwise.
5. The annular space created by the penetration of a fire sprinkler, provided that it is covered by a metal escutcheon plate.
6. Noncombustible items that are cast into concrete building elements and that do not penetrate both top and bottom surfaces of the element.
7. The ceiling membrane of a maximum 2-hour fire-resistance-rated horizontal assembly is permitted to be interrupted with the double wood top plate of a wall assembly that is sheathed with Type X gypsum wallboard, provided that all penetrating items through the double top plates are protected in accordance with Section 714.5.1.1 or 714.5.1.2 and the ceiling membrane is tight to the top plates.
8. Ceiling membrane penetrations by listed luminaires (light fixtures) or by luminaires protected with listed materials, which have been tested for use in fire-resistance-rated assemblies and are installed in accordance with the instructions included in the listing.

714.5.3 Dissimilar materials. Noncombustible penetrating items shall not connect to combustible materials beyond the point of firestopping unless it can be demonstrated that the fire-resistance integrity of the horizontal assembly is maintained.

714.5.4 Penetrations in smoke barriers. Penetrations in smoke barriers shall be protected by an approved through-penetration firestop system installed and tested in accordance with the requirements of UL 1479 for air leakage. The L rating of the system measured at 0.30 inch of water (74.7 Pa) in both the ambient temperature and elevated temperature tests shall not exceed either of the following:

1. 5.0 cfm per square foot (0.025 $m^3/s \times m^2$) of penetration opening for each through-penetration firestop system.
2. A total cumulative leakage of 50 cfm (0.024 m^3/s) for any 100 square feet (9.3 m^2) of wall area, or floor area.

714.6 Nonfire-resistance-rated assemblies. Penetrations of nonfire-resistance-rated floor or floor/ceiling assemblies or the ceiling membrane of a nonfire-resistance-rated roof/ceiling assembly shall meet the requirements of Section 713 or shall comply with Section 714.6.1 or 714.6.2.

714.6.1 Noncombustible penetrating items. Noncombustible penetrating items that connect not more than five stories are permitted, provided that the annular space is filled to resist the free passage of flame and the products of combustion with an approved noncombustible material or with a fill, void or cavity material that is tested and classified for use in through-penetration firestop systems.

714.6.2 Penetrating items. Penetrating items that connect not more than two stories are permitted, provided that the annular space is filled with an approved material to resist the free passage of flame and the products of combustion.

SECTION 715—JOINTS AND VOIDS

715.1 General. The provisions of this section shall govern the materials and methods of construction used to protect joints and voids in or between horizontal and vertical assemblies.

715.2 Installation. Systems or materials protecting joints and voids shall be installed in accordance with Sections 715.2.1 and 715.2.2.

715.2.1 List system installation. Listed fire-resistant joint systems, perimeter fire containment systems and continuity head-of-wall systems shall be securely installed in accordance with the manufacturer's installation instructions and the listing criteria in or on the joint or void for its entire length so as not to dislodge, loosen or otherwise impair its ability to accommodate expected building movements and to resist the passage of fire and hot gases.

715.2.2 Approved materials installation. Approved materials protecting voids shall be securely installed in accordance with the manufacturer's installation instructions in or on the void for its entire length so as not to dislodge, loosen or otherwise impair its ability to accommodate expected building movements and to resist the passage of fire and hot gases.

715.3 Fire-resistance-rated assembly intersections. Joints installed in or between fire-resistance-rated walls, floor or floor/ceiling assemblies and roofs or roof/ceiling assemblies shall be protected by an approved fire-resistant joint system designed to resist the passage of fire for a time period not less than the required fire-resistance rating of the wall, floor or roof in or between which the system is installed.

Exception: Fire-resistant joint systems shall not be required for joints in the following locations:

1. Floors within a single dwelling unit.
2. Floors where the joint is protected by a shaft enclosure in accordance with Section 713.
3. Floors within atriums where the space adjacent to the atrium is included in the volume of the atrium for smoke control purposes.
4. Floors within malls.
5. Floors and ramps within parking garages or structures constructed in accordance with Sections 406.5 and 406.6.
6. Mezzanine floors.
7. Walls that are permitted to have unprotected openings.
8. Roofs where openings are permitted.
9. Control joints not exceeding a maximum width of 0.625 inch (15.9 mm) and tested in accordance with ASTM E119 or UL 263.
10. The intersection of exterior curtain wall assemblies and the roof slab or roof deck.

715.3.1 Fire test criteria. Fire-resistant joint systems shall be tested in accordance with the requirements of either ASTM E1966 or UL 2079. Nonsymmetrical wall joint systems shall be tested with both faces exposed to the furnace, and the assigned fire-resistance rating shall be the shortest duration obtained from the two tests. Where evidence is furnished to show that the wall was tested with the least fire-resistant side exposed to the furnace, subject to acceptance of the building official, the wall need not be subjected to tests from the opposite side.

Exception: For exterior walls with a horizontal fire separation distance greater than 10 feet (3048 mm), the joint system shall be required to be tested for interior fire exposure only.

715.4 Exterior curtain wall/fire-resistance-rated floor intersections. Voids created at the intersection of exterior curtain wall assemblies and fire-resistance-rated floor or floor/ceiling assemblies shall be protected with an approved perimeter fire contain-

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ment system to prevent the interior spread of fire. Such systems shall provide an F rating for a time period not less than the fire-resistance rating of the floor or floor/ceiling assembly.

Exceptions: An approved perimeter fire containment system shall not be required for voids in the following locations:

1. Floors within a single dwelling unit.
2. Floors and ramps within parking garages or structures constructed in accordance with Sections 406.5 and 406.6.
3. Mezzanine floors.

715.4.1 Fire test criteria. Perimeter fire containment systems shall be tested in accordance with the requirements of ASTM E2307.

Exception: Voids created at the intersection of the exterior curtain wall assemblies and floor assemblies where the vision glass extends to the finished floor level shall be permitted to be protected with an approved material to prevent the interior spread of fire. Such material shall be securely installed and capable of preventing the passage of flame and hot gases sufficient to ignite cotton waste where subjected to ASTM E119 time-temperature fire conditions under a minimum positive pressure differential of 0.01 inch of water (2.49 Pa) for the time period not less than the fire-resistance rating of the floor assembly.

715.5 Exterior curtain wall/nonfire-resistance-rated floor assembly intersections. Voids created at the intersection of exterior curtain wall assemblies and nonfire-resistance-rated floor or floor/ceiling assemblies shall be filled with an approved material or system to retard the interior spread of fire and hot gases.

Exceptions: An approved material or system to retard the interior spread of fire and hot gases shall not be required for voids in the following locations:

1. Floors within a single dwelling unit.
2. Floors and ramps within parking garages or structures constructed in accordance with Sections 406.5 and 406.6.
3. Mezzanine floors.

715.6 Fire barrier/nonfire-resistance-rated roof assembly intersections. Voids created at the intersection of a fire barrier and the underside of a nonfire-resistance-rated roof sheathing, slab or deck above shall be filled by an approved material or system to retard the passage of fire and hot gases, or shall be protected by an approved continuity head-of-wall system tested in accordance with ASTM E2837 to provide an F rating/T rating for a time period not less than the required fire-resistance rating of the fire barrier in which it is installed.

715.7 Exterior wall/vertical fire barrier intersections. Voids created at the intersection of nonfire-resistance-rated exterior wall assemblies and vertical fire barriers shall be filled with an approved material or system to retard the interior spread of fire and hot gases.

715.8 Curtain wall spandrels. Height and fire-resistance requirements for curtain wall spandrels shall comply with Section 705.9.5. Where Section 705.9.5 does not require fire-resistance-rated curtain wall spandrels, the requirements of Sections 715.4 and 715.5 shall still apply to the intersection between the curtain wall spandrels and the floor.

715.9 Joints and voids in smoke barriers. Fire-resistant joint systems protecting joints in smoke barriers, and perimeter fire containment systems protecting voids at the intersection of a horizontal smoke barrier and an exterior curtain wall, shall be tested in accordance with the requirements of UL 2079 for air leakage. The L rating of the joint system shall not exceed 5 cubic feet per minute per linear foot (0.00775 m^3/s m) of joint at 0.30 inch of water (74.7 Pa) for both the ambient temperature and elevated temperature tests.

SECTION 716—OPENING PROTECTIVES

716.1 General. Opening protectives required by other sections of this code shall comply with the provisions of this section and shall be installed in accordance with NFPA 80.

TABLE 716.1(1)—MARKING FIRE-RATED GLAZING ASSEMBLIES

FIRE TEST STANDARD	MARKING	DEFINITION OF MARKING
ASTM E119 or UL 263	W	Meets wall assembly criteria.
ASTM E119 or UL 263	FC	Meets floor/ceiling criteria [a]
NFPA 257 or UL 9	OH	Meets fire window assembly criteria including the hose stream test.
NFPA 252 or UL 10B or UL 10C	D	Meets fire door assembly criteria.
	H	Meets fire door assembly hose stream test.
	T	Meets 450°F temperature rise criteria for 30 minutes
—	XXX	The time in minutes of the fire resistance or fire protection rating of the glazing assembly.

For SI:°C = [(°F) – 32]/1.8.
a. See Section 2409.1

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TABLE 716.1(2)—OPENING FIRE PROTECTION ASSEMBLIES, RATINGS AND MARKINGS

TYPE OF ASSEMBLY	REQUIRED WALL ASSEMBLY RATING (hours)		MINIMUM FIRE DOOR AND FIRE SHUTTER ASSEMBLY RATING (hours)	DOOR VISION PANEL SIZE[a]	FIRE-RATED GLAZING MARKING DOOR VISION PANEL[b, c]	MINIMUM SIDELIGHT/TRANSOM ASSEMBLY RATING (hours)		FIRE-RATED GLAZING MARKING SIDE-LIGHT/TRANSOM PANEL	
						Fire protection	Fire resistance	Fire protection	Fire resistance
Fire walls and fire barriers having a required fire-resistance rating greater than 1 hour	4		3	See Note a	D-H-W-240	Not Permitted	4	Not Permitted	W-240
	3		3[d]	See Note a	D-H-W-180	Not Permitted	3	Not Permitted	W-180
	2		1 1/2	100 sq. in.	≤100 sq. in. = D-H-90 >100 sq. in.= D-H-W-90	Not Permitted	2	Not Permitted	W-120
	1 1/2		1 1/2	100 sq. in.	≤100 sq. in. = D-H-90 >100 sq. in.= D-H-W-90	Not Permitted	1 1/2	Not Permitted	W-90
Double fire walls constructed in accordance with NFPA 221	Single-wall assembly rating (hours)[e]	Each wall of the double-wall assembly (hours)[f]	—						
	4	3	3	See Note a	D-H-W-180	Not Permitted	3	Not Permitted	W-180
	3	2	1 1/2	100 sq. in.	≤ 100 sq. in. = D-H-90 >100 sq. in.= D-H-W-90	Not Permitted	2	Not Permitted	W-120
	2	1	1	100 sq. in.	≤ 100 sq. in. = D-H-60 > 100 sq. in. = D-H-W-60	Not Permitted	1	Not Permitted	W-60
Enclosures for shafts, interior exit stairways and interior exit ramps.	2		1 1/2	100 sq. in.[b]	≤100 sq. in. = D-H-90 > 100 sq. in.= D-H-T-W-90	Not Permitted	2	Not Permitted	W-120
Horizontal exits in fire walls[g]	4		3	100 sq. in.	≤100 sq. in. = D-H-180 > 100 sq. in.= D-H-W-240	Not Permitted	4	Not Permitted	W-240
	3		3[d]	100 sq. in.	≤100 sq. in. = D-H-180 > 100 sq. in.= D-H-W-180	Not Permitted	3	Not Permitted	W-180
Fire barriers having a required fire-resistance rating of 1 hour: Enclosures for shafts, exit access stairways, exit access ramps, interior exit stairways and interior exit ramps; and exit passageway walls	1		1	100 sq. in.	≤100 sq. in. = D-H-60 >100 sq. in.= D-H-T-W-60	Not Permitted	1	Not Permitted	W-60
						Fire protection			
Other fire barriers	1		3/4	Maximum size tested	D-H-45	3/4[h]		D-H-45[h]	
Fire partitions: Corridor walls	1		1/3[a]	Maximum size tested	D-20	3/4[a]		D-H-OH-45	
	0.5		1/3[a]	Maximum size tested	D-20	1/3		D-H-OH-20	

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TABLE 716.1(2)—OPENING FIRE PROTECTION ASSEMBLIES, RATINGS AND MARKINGS—continued

TYPE OF ASSEMBLY	REQUIRED WALL ASSEMBLY RATING (hours)	MINIMUM FIRE DOOR AND FIRE SHUTTER ASSEMBLY RATING (hours)	DOOR VISION PANEL SIZE[a]	FIRE-RATED GLAZING MARKING DOOR VISION PANEL[b, c]	MINIMUM SIDELIGHT/TRANSOM ASSEMBLY RATING (hours)		FIRE-RATED GLAZING MARKING SIDELIGHT/TRANSOM PANEL	
					Fire protection	Fire resistance	Fire protection	Fire resistance
					Fire protection			
Other fire partitions	1	3/4[i]	Maximum size tested	D-H-45	3/4		D-H-45	
	0.5	1/3	Maximum size tested	D-H-20	1/3		D-H-20	
Exterior walls	3	1 1/2	100 sq. in.[a]	≤100 sq. in. = D-H-90 > 100 sq. in = D-H-W-90	Not Permitted	3	Not Permitted	W-180
	2	1 1/2	Maximum size tested	D-H 90 or D-H-W-90	1 1/2[h]	2	D-H-OH-90[h]	W-120
					Fire protection			
	1	3/4	Maximum size tested	D-H-45	3/4[h]		D-H-45[h]	
Smoke barriers					**Fire protection**			
	1	1/3	Maximum size tested	D-20	3/4		D-H-OH-45	

For SI: 1 square inch = 645.2 mm.

a. Fire-resistance-rated glazing tested to ASTM E119 in accordance with Section 716.1.2.3 shall be permitted, in the maximum size tested.
b. Under the column heading "Fire-rated glazing marking door vision panel," W refers to the fire-resistance rating of the glazing, not the frame.
c. See Section 716.1.2.2.1 and Table 716.1(1) for additional permitted markings.
d. Two doors, each with a fire protection rating of 1 1/2 hours, installed on opposite sides of the same opening in a fire wall, shall be deemed equivalent in fire protection rating to one 3-hour fire door.
e. As required in Section 706.4.
f. As allowed in Section 4.6 of NFPA 221.
g. See Section 716.2.5.1.2.
h. Fire-protection-rated glazing is not permitted for fire barriers required by Section 1207 of the *California Fire Code* to enclose energy storage systems. Fire-resistance-rated glazing assemblies tested to ASTM E119 or UL 263, as specified in Section 716.1.2.3, shall be permitted.
i. Two doors, each with a fire rating of 20 minutes, installed on opposite sides of the same opening in a fire partition, shall be deemed equivalent in fire protection rating to one 45-minute fire door.

TABLE 716.1(3)—FIRE WINDOW ASSEMBLY FIRE PROTECTION RATINGS

TYPE OF WALL ASSEMBLY	REQUIRED WALL ASSEMBLY RATING (hours)	MINIMUM FIRE WINDOW ASSEMBLY RATING (hours)	FIRE-RATED GLAZING MARKING
Interior walls			
Fire walls	All	NP[a]	W-XXX[b]
Fire barriers	>1	NP[a]	W-XXX[b]
	1	NP[a]	W-XXX[b]
Atrium separations (Section 707.3.6), Incidental use areas (Section 707.3.7),[c] Mixed occupancy separations (Section 707.3.9)	1	3/4	OH-45 or W-60
Fire partitions	1	3/4	OH-45 or W-60
	0.5	1/3	OH-20 or W-30
Smoke barriers	1	3/4	OH-45 or W-60
Exterior walls	>1	1 1/2	OH-90 or W-XXX[b]
	1	3/4	OH-45 or W-60
	0.5	1/3	OH-20 or W-30
Party wall	All	NP	Not Applicable

NP = Not Permitted.

a. Not permitted except fire-resistance-rated glazing assemblies tested to ASTM E119 or UL 263, as specified in Section 716.1.2.3.
b. XXX = The fire rating duration period in minutes, which shall be equal to the fire-resistance rating required for the wall assembly.
c. Fire-protection-rated glazing is not permitted for fire barriers required by Section 1207 of the *California Fire Code* to enclose energy storage systems. Fire-resistance-rated glazing assemblies tested to ASTM E119 or UL 263, as specified in Section 716.1.2.3, shall be permitted.

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716.1.1 Alternative methods for determining fire protection ratings. The application of any of the alternative methods specified in this section shall be based on the fire exposure and acceptance criteria specified in NFPA 252, NFPA 257, UL 9, UL 10B or UL 10C. The required fire protection rating of an opening protective shall be permitted to be established by any of the following methods or procedures:

1. Designs documented in approved sources.
2. Engineering analysis based on a comparison of opening protective designs having fire protection ratings as determined by the test procedures set forth in NFPA 252, NFPA 257, UL 9, UL 10B or UL 10C.
3. Alternative protection methods as allowed by Section 104.2.3.

716.1.2 Glazing. Glazing used in fire door assemblies and fire window assemblies shall comply with this section in addition to the requirements of Sections 716.2 and 716.3, respectively.

716.1.2.1 Safety glazing. Fire-protection-rated glazing and fire-resistance-rated glazing installed in fire door assemblies and fire window assemblies shall comply with the safety glazing requirements of Chapter 24 where applicable.

716.1.2.2 Marking fire-rated glazing assemblies. Fire-rated glazing assemblies shall be marked in accordance with Tables 716.1(1), 716.1(2) and 716.1(3).

716.1.2.2.1 Fire-rated glazing identification. For fire-rated glazing, the label shall bear the identification required in Tables 716.1(1) and 716.1(2). "D" indicates that the glazing is permitted to be used in fire door assemblies and meets the fire protection requirements of NFPA 252, UL 10B or UL 10C. "H" indicates that the glazing meets the hose stream requirements of NFPA 252, UL 10B or UL 10C. "T" indicates that the glazing meets the temperature requirements of Section 716.2.2.3.1. The placeholder "XXX" represents the fire-rating period, in minutes.

716.1.2.2.2 Fire-protection-rated glazing identification. For fire-protection-rated glazing, the label shall bear the following identification required in Tables 716.1(1) and 716.1(3): "OH – XXX." "OH" indicates that the glazing meets both the fire protection and the hose-stream requirements of NFPA 257 or UL 9 and is permitted to be used in fire window openings. The placeholder "XXX" represents the fire-rating period, in minutes.

716.1.2.2.3 Fire-resistance-rated glazing identification. For fire-resistance-rated glazing, the label shall bear the identification required in Section 703.4 and Table 716.1(1).

716.1.2.2.4 Fire-rated glazing that exceeds the code requirements. Fire-rated glazing assemblies marked as complying with hose stream requirements (H) shall be permitted in applications that do not require compliance with hose stream requirements. Fire-rated glazing assemblies marked as complying with temperature rise requirements (T) shall be permitted in applications that do not require compliance with temperature rise requirements. Fire-rated glazing assemblies marked with ratings (XXX) that exceed the ratings required by this code shall be permitted.

716.1.2.3 Fire-resistance-rated glazing. Fire-resistance-rated glazing tested as part of a fire-resistance-rated wall or floor/ceiling assembly in accordance with ASTM E119 or UL 263 and labeled in accordance with Section 703.4 shall not otherwise be required to comply with this section where used as part of a wall or floor/ceiling assembly.

716.1.2.3.1 Glazing in fire door and fire window assemblies. Fire-resistance-rated glazing shall be permitted in fire door and fire window assemblies where tested and installed in accordance with their listings and where in compliance with the requirements of this section.

716.2 Fire door assemblies. Fire door assemblies required by other sections of this code shall comply with the provisions of this section. Fire door frames with transom lights, sidelights or both shall be permitted in accordance with Section 716.2.5.4.

716.2.1 Testing requirements. Approved fire door and fire shutter assemblies shall be constructed of any material or assembly of component materials that conforms to the test requirements of Sections 716.2.1.1 through 716.2.1.4 and the fire protection rating indicated in Table 716.1(2).

Exceptions:

1. Labeled protective assemblies that conform to the requirements of this section or UL 10A, UL 14B and UL 14C for tin-clad fire door assemblies.
2. Floor fire door assemblies in accordance with Section 712.1.13.1.

716.2.1.1 Side-hinged or pivoted swinging doors. Fire door assemblies with side-hinged and pivoted swinging doors shall be tested in accordance with NFPA 252 or UL 10C. For tests conducted in accordance with NFPA 252, the fire test shall be conducted using the positive pressure method specified in the standard.

716.2.1.2 Other types of assemblies. Fire door assemblies with other types of doors, including swinging elevator doors, horizontal sliding fire doors, rolling steel fire doors, fire shutters, bottom- and side-hinged chute intake doors, and top-hinged chute discharge doors, shall be tested in accordance with NFPA 252 or UL 10B. For tests conducted in accordance with NFPA 252, the neutral pressure plane in the furnace shall be maintained as nearly equal to the atmospheric pressure as possible at the top of the door, as specified in the standard.

716.2.1.3 Glazing in transoms lights and sidelights in corridors and smoke barriers. Glazing material in any other part of the door assembly, including transom lights and sidelights, shall be tested in accordance with NFPA 257 or UL 9, including the hose stream test, in accordance with Section 716.3.1.1.

716.2.1.4 Smoke and draft control. Fire door assemblies that serve as smoke and draft control assemblies shall be tested in accordance with UL 1784.

716.2.2 Performance requirements. Fire door assemblies shall be installed in the assemblies specified in Table 716.1(2) and shall comply with the fire protection rating specified.

716.2.2.1 Door assemblies in corridors and smoke barriers. Fire door assemblies required to have a minimum fire protection rating of 20 minutes where located in corridor walls or smoke barrier walls having a fire-resistance rating in accordance with Table 716.1(2) shall be tested in accordance with NFPA 252 or UL 10C without the hose stream test.

Exceptions:

1. Viewports that require a hole not larger than 1 inch (25 mm) in diameter through the door, have not less than a 0.25-inch-thick (6.4 mm) glass disc and the holder is of metal that will not melt out where subject to temperatures of 1,700°F (927°C).
2. Corridor door assemblies in occupancies of Group I-2 *in fully sprinklered buildings* shall be in accordance with Section 407.3.1.
3. Unprotected openings shall be permitted for corridors in multitheater complexes where each motion picture auditorium has not fewer than one-half of its required exit or exit access doorways opening directly to the exterior or into an exit passageway.
4. Horizontal sliding doors in smoke barriers that comply with Sections 408.6 and 408.8.4 in occupancies in Group I-3.
5. *Group I-3 occupancy cell or room doors that have any of the following as integral parts of the rated door assembly:*

   Sidelights, Cuff Ports, Speaker Ports and open into a required exit corridor within a cell complex, medical suite, mental health suite, program office, family visiting area or complex control area.
6. *Safety room doors with a food pass with a lockable shutter, no more than 4 inches (102 mm) high, and located between 26 inches (660 mm) and 32 inches (813 mm) as measured from the bottom of the food pass to the floor.*

716.2.2.1.1 Smoke and draft control. The air leakage rate of the door assembly shall not exceed 3.0 cubic feet per minute per square foot (0.01524 $m^3/s \times m^2$) of door opening at 0.10 inch of water (25 Pa) for both the ambient temperature and elevated temperature tests. Louvers shall be prohibited. Terminated stops shall be prohibited on doors required by Section 405.4.3 to comply with Section 716.2.2.1 and prohibited on doors required by Item 3 of Section 3006.3, or Section 3007.6.3 or 3008.6.3 to comply with this section.

Exception: Elevator hoistway door openings protected in accordance with Section 3006.3.

716.2.2.2 Door assemblies in other fire partitions. Fire door assemblies required to have a minimum fire protection rating of 20 minutes where located in other fire partitions having a fire-resistance rating of 0.5 hour in accordance with Table 716.1(2) shall be tested in accordance with NFPA 252, UL 10B or UL 10C with the hose stream test.

716.2.2.3 Doors in interior exit stairways and ramps and exit passageways. Fire door assemblies in interior exit stairways and ramps and exit passageways shall have a maximum transmitted temperature rise of not more than 450°F (250°C) above ambient at the end of 30 minutes of standard fire test exposure.

Exception: The maximum transmitted temperature rise is not required in buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2.

716.2.2.3.1 Glazing in doors. Fire-protection-rated glazing in excess of 100 square inches (0.065 m^2) is not permitted. Fire-resistance-rated glazing in excess of 100 square inches (0.065 m^2) shall be permitted in fire doors. Listed fire-resistance-rated glazing in a fire door shall have a maximum transmitted temperature rise in accordance with Section 716.2.2.3 when the fire door is tested in accordance with NFPA 252, UL 10B or UL 10C.

716.2.3 Fire doors. Fire doors installed within a fire door assembly shall meet the fire rating indicated in Table 716.1(2).

716.2.4 Fire door frames. Fire door frames installed as part of a fire door assembly shall meet the fire rating indicated in Table 716.1(2).

716.2.5 Glazing in fire door assemblies. Fire-rated glazing conforming to the opening protection requirements in Section 716.2.1 shall be permitted in fire door assemblies.

716.2.5.1 Size limitations. Fire-resistance-rated glazing shall comply with the size limitations in Section 716.2.5.1.1. Fire-protection-rated glazing shall comply with the size limitations of NFPA 80, and as provided in Section 716.2.5.1.2.

716.2.5.1.1 Fire-resistance-rated glazing in door assemblies in fire walls and fire barriers rated greater than 1 hour. Fire-resistance-rated glazing tested to ASTM E119 or UL 263 and NFPA 252, UL 10B or UL 10C shall be permitted in fire door assemblies located in fire walls and in fire barriers in accordance with Table 716.1(2) to the maximum size tested and in accordance with their listings.

716.2.5.1.2 Fire-protection-rated glazing in door assemblies in fire walls and fire barriers rated greater than 1 hour. Fire-protection-rated glazing shall be prohibited in fire walls and fire barriers except as provided in Sections 716.2.5.1.2.1 and 716.2.5.1.2.2.

716.2.5.1.2.1 Horizontal exits. Fire-protection-rated glazing shall be permitted as vision panels in self-closing swinging fire door assemblies serving as horizontal exits in fire walls where limited to 100 square inches (0.065 m^2).

716.2.5.1.2.2 Fire barriers. Fire-protection-rated glazing shall be permitted in fire doors having a $1^1/_2$-hour fire protection rating intended for installation in fire barriers, where limited to 100 square inches (0.065 m^2).

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716.2.5.2 Elevator, stairway and ramp protectives. Approved fire-protection-rated glazing used in fire door assemblies in elevator, stairway and ramp enclosures shall be so located as to furnish clear vision of the passageway or approach to the elevator, stairway or ramp.

716.2.5.3 Glazing in door assemblies in corridors and smoke barriers. In a 20-minute fire door assembly, the glazing material in the door itself shall have a minimum fire-protection-rated glazing of 20 minutes and shall be exempt from the hose stream test.

716.2.5.4 Fire door frames with transom lights and sidelights. Fire-protection-rated glazing shall be permitted in door frames with transom lights, sidelights or both, where a $^3/_4$-hour fire protection rating or less is required and in 2-hour fire-resistance-rated exterior walls in accordance with Table 716.1(2). Fire door frames with transom lights, sidelights or both, installed with fire-resistance-rated glazing tested as an assembly in accordance with ASTM E119 or UL 263 shall be permitted where a fire protection rating exceeding $^3/_4$ hour is required in accordance with Table 716.1(2).

716.2.5.4.1 Energy storage system separation. Fire-protection-rated glazing shall not be permitted in fire door frames with transom lights and sidelights in fire barriers required by Section 1207 of the *California Fire Code* to enclose energy storage systems.

716.2.6 Fire door hardware and closers. Fire door hardware and closers shall be installed on fire door assemblies in accordance with the requirements of this section.

716.2.6.1 Door closing. Fire doors shall be latching and self- or automatic-closing in accordance with this section.

Exceptions:

1. Fire doors located in common walls separating dwelling units or sleeping units in Group R-1 shall be permitted without automatic- or self-closing devices.
2. The elevator car doors and the associated elevator hoistway doors at the floor level designated for recall in accordance with Section 3003.2 shall be permitted to remain open during Phase I emergency recall operation.
3. Fire doors required solely for compliance with ICC 500 shall not be required to be self-closing or automatic-closing.

716.2.6.2 Latch required. Unless otherwise specifically permitted, single side-hinged swinging fire doors and both leaves of pairs of side-hinged swinging fire doors shall be provided with an active latch bolt that will secure the door when it is closed.

716.2.6.3 Chute intake door latching. Chute intake doors shall be positive latching, remaining latched and closed in the event of latch spring failure during a fire emergency.

716.2.6.4 Automatic-closing fire door assemblies. Automatic-closing fire door assemblies shall be self-closing in accordance with NFPA 80.

716.2.6.5 Delayed-action closers. Doors required to be self-closing and not required to be automatic closing shall be permitted to be equipped with delayed-action closers.

716.2.6.6 Smoke-activated doors. Automatic-closing doors installed in the following locations shall be permitted to have hold-open devices. Doors shall automatically close by the actuation of smoke detectors installed in accordance with Section 907.3 or by loss of power to the smoke detector or hold-open device. Doors that are automatic-closing by smoke detection shall not have more than a 10-second delay before the door starts to close after the smoke detector is actuated. Automatic-closing doors that protect openings installed in the following locations shall comply with this section:

1. In walls that separate incidental uses in accordance with Section 509.4.
2. In fire walls in accordance with Section 706.8.
3. In fire barriers in accordance with Section 707.6.
4. In fire partitions in accordance with Section 708.6.
5. In smoke barriers in accordance with Section 709.5.
6. In smoke partitions in accordance with Section 710.5.2.3.
7. In shaft enclosures in accordance with Section 713.7.
8. In waste and linen chutes, discharge openings and access and discharge rooms in accordance with Section 713.13. Loading doors installed in waste and linen chutes shall meet the requirements of Sections 716.2.6.1 and 716.2.6.3.
9. ***[SFM]*** *Doors installed in walls required to be fire rated in accordance with Section 509.4.*
10. ***[SFM]*** *Doors installed in walls required to be fire rated in accordance with Section 508.4.*

In Group I-2 occupancies smoke activated doors installed in the above locations shall be automatic closing by actuation of the fire alarm system, or actuation of smoke detectors installed in accordance with Section 907.3, or activation of the sprinkler system installed in accordance with Section 903.1.

716.2.6.7 Doors in pedestrian ways. Vertical sliding or vertical rolling steel fire doors in openings through which pedestrians travel shall be heat activated or activated by smoke detectors with alarm verification.

716.2.7 Swinging fire shutters. Where fire shutters of the swinging type are installed in exterior openings, not less than one row in every three vertical rows shall be arranged to be readily opened from the outside, and shall be identified by distinguishing marks or letters not less than 6 inches (152 mm) high.

716.2.8 Rolling fire shutters. Where fire shutters of the rolling type are installed, such shutters shall include approved automatic-closing devices.

716.2.9 Labeled protective assemblies. Fire door assemblies shall be labeled by an approved agency. The labels shall comply with NFPA 80, and shall be permanently affixed to the door or frame.

716.2.9.1 Fire door labeling requirements. Fire doors shall be labeled showing the name of the manufacturer or other identification readily traceable back to the manufacturer, the name or trademark of the third-party inspection agency, the fire protection rating and, where required for fire doors in interior exit stairways and ramps and exit passageways by Section 716.2.2.3, the maximum transmitted temperature end point. Smoke and draft control doors complying with UL 1784 shall be labeled as such and shall comply with Section 716.2.9.3. Labels shall be approved and permanently affixed. The label shall be applied at the factory or location where fabrication and assembly are performed.

716.2.9.1.1 Light kits, louvers and components. Listed light kits and louvers and their required preparations shall be considered as part of the labeled door where such installations are done under the listing program of the third-party agency. Fire doors and fire door assemblies shall be permitted to consist of components, including glazing, vision light kits and hardware that are listed or classified and labeled for such use by different third-party agencies.

716.2.9.2 Oversized doors. Oversized fire doors shall bear an oversized fire door label by an approved agency or shall be provided with a certificate of inspection furnished by an approved testing agency. Where a certificate of inspection is furnished by an approved testing agency, the certificate shall state that the door conforms to the requirements of design, materials and construction, but has not been subjected to the fire test.

716.2.9.3 Smoke and draft control door labeling requirements. Smoke and draft control doors complying with UL 1784 shall be labeled in accordance with Section 716.2.9.1 and shall show the letter "S" on the fire-rating label of the door. This marking shall indicate that the door and frame assembly are in compliance where listed or labeled gasketing is installed.

716.2.9.4 Fire door frame labeling requirements. Fire door frames shall be labeled showing the names of the manufacturer and the third-party inspection agency.

Exception: *In Group I-3 doors that are required to be 45 minutes or higher shall be fire-rated assemblies or certified by the manufacturer as being equivalent to the required standard.*

716.2.9.5 Labeling. Fire-rated glazing shall bear a label or other identification showing the name of the manufacturer, the test standard and information required in Table 716.1(1) that shall be issued by an approved agency and shall be permanently identified on the glazing.

716.2.9.6 Fire door operator labeling requirements. Fire door operators for horizontal sliding doors shall be labeled and listed for use with the assembly.

716.2.10 Installation of door assemblies in corridors and smoke barriers. Installation of smoke doors shall be in accordance with NFPA 105.

716.3 Fire window assemblies. Fire window assemblies required by other sections of this code shall comply with the provisions of this section.

716.3.1 Testing requirements. Fire window assemblies shall be constructed of any material or assembly of component materials that conforms to the test requirements of Sections 716.3.1.1 and 716.3.1.2 and the fire protection rating indicated in Table 716.1(3).

716.3.1.1 Testing under positive pressure. NFPA 257 or UL 9 shall evaluate fire-protection-rated glazing under positive pressure. Within the first 10 minutes of a test, the pressure in the furnace shall be adjusted so not less than two-thirds of the test specimen is above the neutral pressure plane, and the neutral pressure plane shall be maintained at that height for the balance of the test.

716.3.1.2 Nonsymmetrical glazing systems. Nonsymmetrical fire-protection-rated glazing systems in fire partitions, fire barriers or in exterior walls with a fire separation distance of 10 feet (3048 mm) or less pursuant to Section 705 shall be tested with both faces exposed to the furnace, and the assigned fire protection rating shall be the shortest duration obtained from the two tests conducted in compliance with NFPA 257 or UL 9.

716.3.2 Performance requirements. Fire window assemblies shall be installed in the assemblies and comply with the fire protection rating specified in Table 716.1(3).

716.3.2.1 Interior fire window assemblies. Fire-protection-rated glazing used in fire window assemblies located in fire partitions and fire barriers shall be limited to use in assemblies with a maximum fire-resistance rating of 1 hour in accordance with this section.

716.3.2.1.1 Where $^{3}/_{4}$-hour-fire-protection window assemblies permitted. Fire-protection-rated glazing requiring 45-minute opening protection in accordance with Table 716.1(3) shall be limited to fire partitions designed in accordance with Section 708 and fire barriers utilized in the applications set forth in Sections 707.3.6, 707.3.7 and 707.3.9 where the fire-resistance rating does not exceed 1 hour. Fire-resistance-rated glazing assemblies tested in accordance with ASTM E119 or UL 263 shall not be subject to the limitations of this section.

716.3.2.1.1.1 Energy storage system separation. Fire-protection-rated glazing is not permitted for use in fire window assemblies in fire barriers required by Section 1207 of the *California Fire Code* to enclose energy storage systems.

716.3.2.1.2 Area limitations. The total area of the glazing in fire-protection-rated window assemblies shall not exceed 25 percent of the area of a common wall with any room.

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716.3.2.1.3 Where $^1/_3$-hour-fire-protection window assemblies permitted. Fire-protection-rated glazing shall be permitted in window assemblies tested to NFPA 257 or UL 9 in fire partitions requiring $^1/_3$-hour opening protection in accordance with Table 716.1(3).

716.3.3 Fire window frames. Fire window frames installed with a fire window assembly shall meet the fire-protection rating indicated in Table 716.1(3).

716.3.3.1 Window mullions. Metal mullions that exceed a nominal height of 12 feet (3658 mm) shall be protected with materials to afford the same fire-resistance rating as required for the wall construction in which the protective is located.

716.3.4 Fire-protection-rated glazing. Glazing in fire window assemblies shall be fire protection rated in accordance with this section and Table 716.1(3). Fire-protection-rated glazing in fire window assemblies shall be tested in accordance with and shall meet the acceptance criteria of NFPA 257 or UL 9. Openings in nonfire-resistance-rated exterior wall assemblies that require protection in accordance with Section 705.3, 705.9, 705.9.5 or 705.9.6 shall have a fire protection rating of not less than $^3/_4$ hour. Fire-protection-rated glazing in $^1/_2$-hour fire-resistance-rated partitions is permitted to have a 20-minute fire protection rating.

716.3.4.1 Glass and glazing. Glazing in fire window assemblies shall be fire-protection-rated glazing installed in accordance with and complying with the size limitations set forth in NFPA 80.

716.3.5 Labeled protective assemblies. Glazing in fire window assemblies shall be labeled by an approved agency. The labels shall comply with NFPA 80 and Section 716.3.5.2.

716.3.5.1 Fire window frames. Fire window frames shall be approved for the intended application.

716.3.5.2 Labeling requirements. Fire-protection-rated glazing shall bear a label or other identification showing the name of the manufacturer, the test standard and information required in Section 716.1.2.2.2 and Table 716.1(3) that shall be issued by an approved agency and permanently identified on the glazing.

716.3.6 Installation. Fire window assemblies shall be installed in accordance with the provisions of this section.

716.3.6.1 Closure. Fire-protection-rated glazing shall be in the fixed position or be automatic-closing and shall be installed in labeled frames.

716.4 Fire protective curtain assembly. Approved fire protective curtain assemblies shall be constructed of any materials or assembly of component materials tested without hose stream in accordance with UL 10D, and shall comply with the Sections 716.4.1 through 716.4.3.

716.4.1 Label. Fire protective curtain assemblies used as opening protectives in fire-rated walls and smoke partitions shall be labeled in accordance with Section 716.2.9.

716.4.2 Smoke and draft control. Fire protective curtain assemblies used to protect openings where smoke and draft control assemblies are required shall comply with Section 716.2.1.4.

716.4.3 Installation. Fire protective curtain assemblies shall be installed in accordance with NFPA 80.

SECTION 717—DUCTS AND AIR TRANSFER OPENINGS

717.1 General. The provisions of this section shall govern the protection of duct penetrations and air transfer openings in assemblies required to be protected and duct penetrations in nonfire-resistance-rated floor assemblies.

717.1.1 Ducts and air transfer openings. Ducts transitioning horizontally between shafts shall not require a shaft enclosure provided that the duct penetration into each associated shaft is protected with dampers complying with this section.

717.1.2 Ducts that penetrate fire-resistance-rated assemblies without dampers. Ducts that penetrate fire-resistance-rated walls and are not required by this section to have fire dampers shall comply with the requirements of Sections 714.3 through 714.4.3. Ducts that penetrate horizontal assemblies not required to be contained within a shaft and not required by this section to have fire dampers shall comply with the requirements of Sections 714.5 through 714.6.2.

717.1.2.1 Ducts that penetrate nonfire-resistance-rated assemblies. The space around a duct penetrating a nonfire-resistance-rated floor assembly shall comply with Section 717.6.3.

717.2 Installation. Fire dampers, smoke dampers, combination fire/smoke dampers and ceiling radiation dampers located within air distribution and smoke control systems shall be installed in accordance with the manufacturer's instructions, the dampers' listing and Sections 717.2.1 through 717.2.4.

717.2.1 Smoke control system. Where the installation of a fire damper will interfere with the operation of a required smoke control system in accordance with Section 909, approved alternative protection shall be utilized. Where mechanical systems including ducts and dampers utilized for normal building ventilation serve as part of the smoke control system, the expected performance of these systems in smoke control mode shall be addressed in the rational analysis required by Section 909.4.

717.2.2 Hazardous exhaust ducts. Fire dampers for hazardous exhaust duct systems shall comply with the *California Mechanical Code*.

717.2.3 Static dampers. Fire dampers and ceiling radiation dampers that are listed for use in static systems shall only be installed in heating, ventilation and air-conditioning systems that are automatically shut down in the event of a fire.

717.2.4 Mechanical, electrical and plumbing controls. Mechanical, electrical and plumbing controls shall not be installed in air duct systems.

Exception: Controls where the wiring is directly associated with the air distribution system. The wiring shall comply with the requirements of Section *601* of the *California Mechanical Code* and be as short as practicable.

717.2.4.1 Controls not permitted to be installed through dampers. Mechanical, electrical and plumbing controls shall not be installed through fire dampers, smoke dampers, combination fire/smoke dampers or ceiling radiation dampers unless otherwise permitted by the manufacturer and the listing.

717.3 Damper testing, ratings and actuation. Damper testing, ratings and actuation shall be in accordance with Sections 717.3.1 through 717.3.3.

717.3.1 Damper testing. Dampers shall be listed and labeled in accordance with the standards in this section.

1. Fire dampers shall comply with the requirements of UL 555.
2. Smoke dampers shall comply with the requirements of UL 555S.
3. Combination fire/smoke dampers shall comply with the requirements of both UL 555 and UL 555S.
4. Ceiling radiation dampers shall comply with the requirements of UL 555C or shall be tested as part of a fire-resistance-rated floor/ceiling or roof/ceiling assembly in accordance with ASTM E119 or UL 263.
5. Corridor dampers shall comply with requirements of both UL 555 and UL 555S. Corridor dampers shall demonstrate acceptable closure performance when subjected to 150 feet per minute (0.76 mps) velocity across the face of the damper during the UL 555 fire exposure test.

717.3.2 Damper rating. Damper ratings shall be in accordance with Sections 717.3.2.1 through 717.3.2.4.

717.3.2.1 Fire damper ratings. Fire dampers shall have the minimum rating specified in Table 717.3.2.1.

TABLE 717.3.2.1—FIRE DAMPER RATING

TYPE OF PENETRATION	MINIMUM DAMPER RATING (hours)
Less than 3-hour fire-resistance-rated assemblies	1.5
3-hour or greater fire-resistance-rated assemblies	3

717.3.2.2 Smoke damper ratings. Smoke damper leakage ratings shall be Class I or II. Elevated temperature ratings shall be not less than 250°F (121°C).

717.3.2.3 Combination fire/smoke damper ratings. Combination fire/smoke dampers shall have the minimum rating specified for fire dampers in Table 717.3.2.1 and shall have the minimum rating specified for smoke dampers in Section 717.3.2.2.

717.3.2.4 Corridor damper ratings. Corridor dampers shall have the following minimum ratings:

1. One-hour fire-resistance rating.
2. Class I or II leakage rating as specified in Section 717.3.2.2.

717.3.3 Damper actuation. Damper actuation shall be in accordance with Sections 717.3.3.1 through 717.3.3.5 as applicable.

717.3.3.1 Fire damper actuation. Primary heat responsive devices used to actuate fire dampers shall meet one of the following requirements:

1. The operating temperature shall be approximately 50°F (10°C) above the normal temperature within the duct system, but not less than 160°F (71°C).
2. The operating temperature shall be not more than 350°F (177°C) where located in a smoke control system complying with Section 909.

717.3.3.2 Smoke damper actuation. The smoke damper shall close upon actuation of a listed smoke detector or detectors installed in accordance with Section 907.3 and one of the following methods, as applicable:

1. Where a smoke damper is installed within a duct, a smoke detector shall be installed inside the duct or outside the duct with sampling tubes protruding into the duct. The detector or tubes within the duct shall be within 5 feet (1524 mm) of the damper. Air outlets and inlets shall not be located between the detector or tubes and the damper. The detector shall be listed for the air velocity, temperature and humidity anticipated at the point where it is installed. Other than in mechanical smoke control systems, dampers shall be closed upon fan shutdown where local smoke detectors require a minimum velocity to operate.
2. Where a smoke damper is installed above smoke barrier doors in a smoke barrier, a spot-type detector shall be installed on either side of the smoke barrier door opening. The detector shall be listed for releasing service if used for direct interface with the damper.
3. Where a smoke damper is installed within an air transfer opening in a wall, a spot-type detector shall be installed within 5 feet (1524 mm) horizontally of the damper. The detector shall be listed for releasing service if used for direct interface with the damper.

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4. Where a smoke damper is installed in a corridor wall or ceiling, the damper shall be permitted to be controlled by a smoke detection system installed in the corridor.
5. Where a smoke detection system is installed in all areas served by the duct in which the damper will be located, the smoke dampers shall be permitted to be controlled by the smoke detection system.

717.3.3.3 Combination fire/smoke damper actuation. Combination fire/smoke damper actuation shall be in accordance with Sections 717.3.3.1 and 717.3.3.2. Combination fire/smoke dampers installed in smoke control system shaft penetrations shall not be activated by local area smoke detection unless it is secondary to the smoke control system controls.

717.3.3.4 Ceiling radiation damper actuation. The operating temperature of a ceiling radiation damper actuation device shall be 50°F (27.8°C) above the normal temperature within the duct system, but not less than 160°F (71°C).

717.3.3.5 Corridor damper actuation. Corridor damper actuation shall be in accordance with Sections 717.3.3.1 and 717.3.3.2.

717.4 Access and identification. Access and identification of fire and smoke dampers shall comply with Sections 717.4.1 through 717.4.2.

717.4.1 Access. Fire and smoke dampers shall be provided with an approved means of access that is large enough to permit inspection and maintenance of the damper and its operating parts. Dampers equipped with fusible links, internal operators, or both shall be provided with an access door that is not less than 12 inches (305 mm) square or provided with a removable duct section.

717.4.1.1 Access openings. The access shall not affect the integrity of fire-resistance-rated assemblies. The access openings shall not reduce the fire-resistance rating of the assembly. Access doors in ducts shall be tight fitting and suitable for the required duct construction.

717.4.1.2 Restricted access. Where space constraints or physical barriers restrict access to a damper for periodic inspection and testing, the damper shall be a single- or multi-blade type damper and shall comply with the remote inspection requirements of NFPA 80 or NFPA 105.

717.4.2 Identification. Access points shall be permanently identified on the exterior by a label having letters not less than $^{1}/_{2}$ inch (12.7 mm) in height reading: "FIRE/SMOKE DAMPER," "SMOKE DAMPER" or "FIRE DAMPER."

717.5 Where required. Fire dampers, smoke dampers, combination fire/smoke dampers, ceiling radiation dampers and corridor dampers shall be provided at the locations prescribed in Sections 717.5.1 through 717.5.7 and 717.6. Where an assembly is required to have both fire dampers and smoke dampers, combination fire/smoke dampers or a fire damper and a smoke damper shall be provided.

717.5.1 Fire walls. Ducts and air transfer openings permitted in fire walls in accordance with Section 706.11 shall be protected with listed fire dampers installed in accordance with their listing.

717.5.1.1 Horizontal exits. A listed smoke damper designed to resist the passage of smoke shall be provided at each point a duct or air transfer opening penetrates a fire wall that serves as a horizontal exit.

717.5.2 Fire barriers. *In other than Group A, E, H, I, L and R occupancies, high-rise buildings, and other applications listed in Section 1.11 regulated by the Office of the State Fire Marshal.* Ducts and air transfer openings of fire barriers shall be protected with listed fire dampers installed in accordance with their listing. Ducts and air transfer openings shall not penetrate enclosures for interior exit stairways and ramps and exit passageways, except as permitted by Sections 1023.5 and 1024.6, respectively.

Exceptions: Fire dampers are not required at penetrations of fire barriers where any of the following apply:

1. Penetrations are tested in accordance with ASTM E119 or UL 263 as part of the fire-resistance-rated assembly.
2. Ducts are used as part of an approved smoke control system in accordance with Section 909 and where the use of a fire damper would interfere with the operation of a smoke control system.
3. Such walls are penetrated by fully ducted HVAC systems, have a required fire-resistance rating of 1 hour or less, are in areas of other than Group H and are in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2. For the purposes of this exception, a fully ducted HVAC system shall be a duct system for conveying supply, return or exhaust air as part of the structure's HVAC system. Such a duct system shall be constructed of sheet steel not less than No. 26 gage thickness and shall be continuous from the air-handling appliance or equipment to the air outlet and inlet terminals. Nonmetal flexible air connectors shall be permitted in the following locations *in accordance with Section 603 of the California Mechanical Code:*
   3.1. At the duct connection to the air handling unit or equipment located within the mechanical room.
   3.2. From an overhead metal duct to a ceiling diffuser within the same room.

[SFM] *For Group A, E, H, I, L and R occupancies, high-rise buildings, and other applications listed in Section 1.11 regulated by the Office of the State Fire Marshal, ducts and air transfer openings of fire barriers shall be protected with approved fire and smoke dampers installed in accordance with their listing. Ducts and air transfer openings shall not penetrate exit enclosures and exit passageways except as permitted by Sections 1023.5 and 1024.6, respectively.*

Exceptions:

1. *Fire dampers are not required at penetrations of fire barriers where penetrations are tested in accordance with ASTM E119 as part of the fire-resistance rated assembly.*

2. *Fire and smoke dampers are not required where ducts are used as part of an approved smoke control system in accordance with Section 909 and where the use of a fire or smoke damper would interfere with the operation of a smoke control system.*

717.5.2.1 Horizontal exits. A listed smoke damper designed to resist the passage of smoke shall be provided at each point a duct or air transfer opening penetrates a fire barrier that serves as a horizontal exit.

717.5.3 Shaft enclosures. Shaft enclosures that are permitted to be penetrated by ducts and air transfer openings shall be protected with listed fire and smoke dampers installed in accordance with their listing.

Exceptions:

1. Fire dampers are not required at penetrations of shafts where any of the following criteria are met:
   1.1. Steel exhaust subducts having a wall thickness of not less than 0.0187 inch (0.4712 mm) are extended not less than 22 inches (559 mm) vertically in exhaust shafts, and an exhaust fan is installed at the upper terminus of the shaft that is powered continuously in accordance with Section 909.11, so as to maintain a continuous upward airflow to the outdoors.
   1.2. Penetrations are tested in accordance with ASTM E119 or UL 263 as part of the fire-resistance-rated assembly.
   1.3. Ducts are used as part of an approved smoke control system designed and installed in accordance with Section 909 and where the fire damper will interfere with the operation of the smoke control system.
   1.4. The penetrations are in parking garage exhaust or supply shafts that are separated from other building shafts by not less than 2-hour fire-resistance-rated construction.
2. In Group B and R occupancies equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1, smoke dampers are not required at penetrations of shafts where all of the following criteria are met:
   2.1. Kitchen, clothes dryer, bathroom and toilet room exhaust openings are installed with steel exhaust subducts, having a wall thickness of not less than 0.0187 inch (0.4712 mm).
   2.2. The subducts extend not less than 22 inches (559 mm) vertically.
   2.3. An exhaust fan is installed at the upper terminus of the shaft that is powered continuously in accordance with the provisions of Section 909.11, so as to maintain a continuous upward airflow to the outdoors.
3. Smoke dampers are not required at penetration of exhaust or supply shafts in parking garages that are separated from other building shafts by not less than 2-hour fire-resistance-rated construction.
4. Smoke dampers are not required at penetrations of shafts where ducts are used as part of an approved mechanical smoke control system designed in accordance with Section 909 and where the smoke damper will interfere with the operation of the smoke control system.
5. Fire dampers and combination fire/smoke dampers are not required in kitchen and clothes dryer exhaust systems where dampers are prohibited by the *California Mechanical Code*.

717.5.3.1 Continuous upward airflow. Fire dampers and smoke dampers shall not be installed in shafts that are required to maintain a continuous upward airflow path where closure of the damper would result in the loss of the airflow.

717.5.4 Fire partitions. *In other than Group A, E, I and R occupancies, high-rise buildings, and other applications listed in Section 1.11 regulated by the Office of the State Fire Marshal,* ducts and air transfer openings that penetrate fire partitions shall be protected with listed fire dampers installed in accordance with their listing.

Exceptions: In occupancies other than Group H *and L*, fire dampers are not required where any of the following apply:

1. Corridor walls in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2 and the duct is protected as a through penetration in accordance with Section 714.
2. Tenant partitions in covered and open mall buildings where the walls are not required by provisions elsewhere in the code to extend to the underside of the floor or roof sheathing, slab or deck above.
3. The duct system is constructed of approved materials in accordance with the *California Mechanical Code* and the duct penetrating the wall complies with all of the following requirements:
   3.1. The duct shall not exceed 100 square inches (0.06 m^2).
   3.2. The duct shall be constructed of steel not less than 0.0217 inch (0.55 mm) in thickness.
   3.3. The duct shall not have openings that communicate the corridor with adjacent spaces or rooms.
   3.4. The duct shall be installed above a ceiling.
   3.5. The duct shall not terminate at a wall register in the fire-resistance-rated wall.
   3.6. A minimum 12-inch-long (305 mm) by 0.060-inch-thick (1.52 mm) steel sleeve shall be centered in each duct opening. The sleeve shall be secured to both sides of the wall and all four sides of the sleeve with minimum $1^1/_2$-inch by $1^1/_2$-inch by 0.060-inch (38 mm by 38 mm by 1.52 mm) steel retaining angles. The retaining angles shall be secured to the sleeve and the wall with No. 10 (M5) screws. The annular space between the steel sleeve and the wall opening shall be filled with mineral wool batting on all sides.
4. Such walls are penetrated by ducted HVAC systems, have a required fire-resistance rating of 1 hour or less, and are in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2. For the purposes of this exception, a ducted HVAC system shall be a duct system for conveying supply, return or

exhaust air as part of the structure's HVAC system. Such a duct system shall be constructed of sheet steel not less than No. 26 gage thickness and shall be continuous from the air-handling appliance or equipment to the air outlet and inlet terminals.

For Group A, E, I and R occupancies, high-rise buildings, and other applications listed in Section 1.11 regulated by the Office of the State Fire Marshal, ducts and air transfer openings that penetrate fire partitions shall be protected with listed fire dampers installed in accordance with their listings.

Exceptions:

1. *Fire dampers are not required in corridor penetrations where the duct is constructed of steel not less than 0.019 inch (0.48 mm) in thickness, protected as a through penetration in accordance with Section 713 and there are no openings serving the corridor.*
2. *Fire dampers are not required where the duct system is constructed of approved materials in accordance with the California Mechanical Code and the duct penetrating the wall complies with all of the following requirements:*
   - *2.1. For other than corridors in Group I-2 occupancies the duct shall not exceed 100 square inches (0.6 m^2).*
   - *2.2. The duct shall be constructed of steel a minimum of 0.0217 inch (0.55 mm) in thickness.*
   - *2.3. The duct shall not have openings that communicate the corridor with adjacent spaces or rooms.*
   - *2.4. The duct shall be installed above a ceiling.*
   - *2.5. The duct shall not terminate at a wall register in the fire-resistance rated wall.*
   - *2.6. The duct shall be protected as a through penetration in accordance with Section 714 or shall comply with all of the following:*
     1. *A minimum 12-inch-long (305 mm) by 0.060-inch-thick (1.52 mm) steel sleeve shall be centered in each duct opening.*
     2. *The sleeve shall be secured to both sides of the wall and for all four sides of the sleeve with minimum $1^1/_2$-inch by $1^1/_2$-inch by 0.060-inch (38 mm by 38 mm by 1.52 mm) steel retaining angles.*
     3. *The retaining angles shall be secured to the sleeve and the wall with No. 10 (M5) screws.*
     4. *The annular space between the steel sleeve and the wall opening shall be filled with mineral wool batting on all sides.*

717.5.4.1 Corridors. *In other than Group A, E, H, I, L and R occupancies, high-rise buildings, and other applications listed in Section 1.11 regulated by the Office of the State Fire Marshal,* duct and air transfer openings that penetrate corridors shall be protected with dampers as follows:

1. A corridor damper shall be provided where corridor ceilings, constructed as required for the corridor walls as permitted in Section 708.4, Exception 3, are penetrated.
2. A ceiling radiation damper shall be provided where the ceiling membrane of a fire-resistance-rated floor-ceiling or roof-ceiling assembly, constructed as permitted in Section 708.4, Exception 2, is penetrated.
3. A listed smoke damper designed to resist the passage of smoke shall be provided at each point a duct or air transfer opening penetrates a corridor enclosure required to have smoke and draft control doors in accordance with Section 716.2.2.1.

Exceptions:

1. Smoke dampers are not required where the building is equipped throughout with an approved smoke control system in accordance with Section 909, and smoke dampers are not necessary for the operation and control of the system.
2. Smoke dampers are not required in corridor penetrations where the duct is constructed of steel not less than 0.019 inch (0.48 mm) in thickness and there are no openings serving the corridor.

[SFM] *For Group A, E, H, I, L and R occupancies, high-rise buildings, and other applications listed in Section 1.11 regulated by the Office of the State Fire Marshal, a listed smoke damper designed to resist the passage of smoke shall also be provided at each point a duct or air transfer opening penetrates a fire-resistance rated corridor enclosure required to have smoke and draft doors in accordance with Section 716.2.2.1 or doors that provide an effective barrier to limit the transfer of smoke in accordance with Section 407.3.1.*

Exceptions:

1. *Smoke dampers are not required where ducts are used as part of an approved mechanical smoke control system designed in accordance with Section 909 and where the smoke damper will interfere with the operation of the smoke control system.*
2. *Smoke dampers are not required in corridor penetrations where the duct is constructed of steel not less than 0.019 inch (0.48 mm) in thickness and there are no openings serving the corridor.*

717.5.5 Smoke barriers. A listed smoke damper designed to resist the passage of smoke shall be provided at each point a duct or air transfer opening penetrates a smoke barrier. Smoke dampers and smoke damper actuation methods shall comply with Section 717.3.3.2.

Exception: Smoke dampers are not required where the openings in ducts are limited to a single smoke compartment and the ducts are constructed of steel.

➡ **717.5.6 Exterior walls.** Ducts and air transfer openings in fire-resistance-rated exterior walls required to have protected openings in accordance with Section 705.11 shall be protected with listed fire dampers installed in accordance with their listing.

717.5.7 Smoke partitions. A listed smoke damper designed to resist the passage of smoke shall be provided at each point that an air transfer opening penetrates a smoke partition. Smoke dampers and smoke damper actuation methods shall comply with Section 717.3.3.2.

Exception: Where the installation of a smoke damper will interfere with the operation of a required smoke control system in accordance with Section 909, approved alternative protection shall be utilized.

717.6 Horizontal assemblies. Penetrations by ducts and air transfer openings of a floor, floor/ceiling assembly or the ceiling membrane of a roof/ceiling assembly shall be protected by a shaft enclosure that complies with Section 713 or shall comply with Sections 717.6.1 through 717.6.3.

717.6.1 Through penetrations. A duct constructed of approved materials in accordance with the *California Mechanical Code* that penetrates a fire-resistance-rated floor/ceiling assembly that connects not more than two stories is permitted without shaft enclosure protection, provided that a listed fire damper is installed at the floor line or the duct is protected in accordance with Section 714.5. For air transfer openings, see Section 712.1.9.

Exception: In occupancies other than Groups I-2 and I-3, a duct is permitted to penetrate three floors or less without a fire damper at each floor, provided that such duct meets all of the following requirements:

1. The duct shall be contained and located within the cavity of a wall and shall be constructed of steel having a minimum wall thickness of 0.0187 inches (0.4712 mm) (No. 26 gage).
2. The duct shall open into only one dwelling unit or sleeping unit and the duct system shall be continuous from the unit to the exterior of the building.
3. The duct shall not exceed 4-inch (102 mm) nominal diameter and the total area of such ducts shall not exceed 100 square inches (0.065 m^2) in any 100 square feet (9.3 m^2) of floor area.
4. The annular space around the duct is protected with materials that prevent the passage of flame and hot gases sufficient to ignite cotton waste where subjected to ASTM E119 or UL 263 time-temperature conditions under a minimum positive pressure differential of 0.01 inch of water (2.49 Pa) at the location of the penetration for the time period equivalent to the fire-resistance rating of the construction penetrated.
5. Grille openings located in a ceiling of a fire-resistance-rated floor/ceiling or roof/ceiling assembly shall be protected with a listed ceiling radiation damper installed in accordance with Section 717.6.2.1.

717.6.2 Membrane penetrations. Ducts and air transfer openings constructed of approved materials in accordance with the *California Mechanical Code* that penetrate the ceiling membrane of a fire-resistance-rated floor/ceiling or roof/ceiling assembly shall be protected with one of the following:

1. A shaft enclosure in accordance with Section 713.
2. A listed ceiling radiation damper installed at the ceiling line where a duct penetrates the ceiling of a fire-resistance-rated floor/ceiling or roof/ceiling assembly.

   Exceptions:

   1. A fire-resistance-rated assembly tested in accordance with ASTM E119 or UL 263 showing that ceiling radiation dampers are not required in order to maintain the fire-resistance rating of the assembly.
   2. Where exhaust duct or outdoor air duct penetrations protected in accordance with Section 714.5.2 are located within the cavity of a wall and do not pass through another dwelling unit or tenant space.
   3. Where duct and air transfer openings are protected with a duct outlet penetration system tested as part of a fire-resistance-rated assembly in accordance with ASTM E119 or UL 263.
3. A listed ceiling radiation damper installed at the ceiling line where a diffuser with no duct attached penetrates the ceiling of a fire-resistance-rated floor/ceiling or roof/ceiling assembly.

   Exceptions:

   1. A fire-resistance-rated assembly tested in accordance with ASTM E119 or UL 263 showing that ceiling radiation dampers are not required in order to maintain the fire-resistance rating of the assembly.
   2. Where duct and air transfer openings are protected with a duct outlet penetration system tested as part of a fire-resistance-rated assembly in accordance with ASTM E119 or UL 263.

717.6.2.1 Ceiling radiation dampers testing and installation. Ceiling radiation dampers shall be tested in accordance with Section 717.3.1. Ceiling radiation dampers shall be installed in accordance with the details specified in the fire-resistance-rated assembly and the manufacturer's instructions and the listing.

717.6.2.1.1 Dynamic systems. Only ceiling radiation dampers labeled for use in dynamic systems shall be installed in heating, ventilation and air-conditioning systems designed to operate with fans on during a fire.

717.6.2.1.2 Static systems. Static ceiling radiation dampers shall be provided with systems that are not designed to operate during a fire.

Exceptions:

1. Where a static ceiling radiation damper is installed at the opening of a duct, a smoke detector shall be installed inside the duct or outside the duct with sampling tubes protruding into the duct. The detector or tubes in the duct shall be within 5 feet (1524 mm) of the damper. Air outlets and inlets shall not be located between the detector or tubes and the damper. The detector shall be listed for the air velocity, temperature and humidity

anticipated at the point where it is installed. Other than in mechanical smoke control systems, dampers shall be closed upon fan shutdown where local smoke detectors require a minimum velocity to operate.

2. Where a static ceiling radiation damper is installed in a ceiling, the ceiling radiation damper shall be permitted to be controlled by a smoke detection system installed in the same room or area as the ceiling radiation damper.
3. A static ceiling radiation damper shall be permitted to be installed in a room where an occupant sensor is provided within the room that will shut down the system.

717.6.3 Nonfire-resistance-rated floor assemblies. Duct systems constructed of approved materials in accordance with the *California Mechanical Code* that penetrate nonfire-resistance-rated floor assemblies shall be protected by any of the following methods:

1. A shaft enclosure in accordance with Section 713.
2. The duct connects not more than two stories, and the annular space around the penetrating duct is protected with an approved noncombustible material that resists the free passage of flame and the products of combustion.
3. In floor assemblies composed of noncombustible materials, a shaft shall not be required where the duct connects not more than three stories, the annular space around the penetrating duct is protected with an approved noncombustible material that resists the free passage of flame and the products of combustion and a fire damper is installed at each floor line.

   Exception: Fire dampers are not required in ducts within individual residential dwelling units.

717.7 Flexible ducts and air connectors. Flexible ducts and air connectors shall not pass through any fire-resistance-rated assembly. Flexible air connectors shall not pass through any wall, floor or ceiling.

SECTION 718—CONCEALED SPACES

718.1 General. Fireblocking and draftstops shall be installed in combustible concealed locations in accordance with this section. Fireblocking shall comply with Section 718.2. Draftstops in floor/ceiling spaces and attic spaces shall comply with Sections 718.3 and 718.4, respectively. The permitted use of combustible materials in concealed spaces of buildings of Type I or II construction shall be limited to the applications indicated in Section 718.5.

718.2 Fireblocking. In combustible construction, fireblocking shall be installed to cut off concealed draft openings (both vertical and horizontal) and shall form an effective barrier between floors, between a top story and a roof or attic space. Fireblocking shall be installed in the locations specified in Sections 718.2.2 through 718.2.7.

718.2.1 Fireblocking materials. Fireblocking shall consist of the following materials:

1. Two-inch (51 mm) nominal lumber.
2. Two thicknesses of 1-inch (25 mm) nominal lumber with broken lap joints.
3. One thickness of 0.719-inch (18.3 mm) wood structural panels with joints backed by 0.719-inch (18.3 mm) wood structural panels.
4. One thickness of 0.75-inch (19.1 mm) particleboard with joints backed by 0.75-inch (19 mm) particleboard.
5. One-half-inch (12.7 mm) gypsum board.
6. One-fourth-inch (6.4 mm) cement-based millboard.
7. Batts or blankets of mineral wool, mineral fiber or other approved materials installed in such a manner as to be securely retained in place.
8. Cellulose insulation tested in the form and manner intended for use to demonstrate its ability to remain in place and to retard the spread of fire and hot gases.
9. Mass timber complying with Section 2304.11.
10. One thickness of $^{19}/_{32}$-inch (15.1 mm) fire-retardant-treated wood structural panel complying with Section 2303.2.

718.2.1.1 Batts or blankets of mineral wool or mineral fiber. Batts or blankets of mineral wool or mineral fiber or other approved nonrigid materials shall be permitted for compliance with the 10-foot (3048 mm) horizontal fireblocking in walls constructed using parallel rows of studs or staggered studs.

718.2.1.2 Unfaced fiberglass. Unfaced fiberglass batt insulation used as fireblocking shall fill the entire cross section of the wall cavity to a minimum height of 16 inches (406 mm) measured vertically. Where piping, conduit or similar obstructions are encountered, the insulation shall be packed tightly around the obstruction.

718.2.1.3 Loose-fill insulation material. Loose-fill insulation material, insulating foam sealants and caulk materials shall not be used as a fireblock unless specifically tested in the form and manner intended for use to demonstrate its ability to remain in place and to retard the spread of fire and hot gases.

718.2.1.4 Fireblocking integrity. The integrity of fireblocks shall be maintained.

718.2.1.5 Double stud walls. Batts or blankets of mineral or glass fiber or other approved nonrigid materials shall be allowed as fireblocking in walls constructed using parallel rows of studs or staggered studs.

718.2.2 Concealed wall spaces. Fireblocking shall be provided in concealed spaces of stud walls and partitions, including furred spaces, and parallel rows of studs or staggered studs, as follows:

1. Vertically at the ceiling and floor levels.
2. Horizontally at intervals not exceeding 10 feet (3048 mm).

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718.2.3 Connections between horizontal and vertical spaces. Fireblocking shall be provided at interconnections between concealed vertical stud wall or partition spaces and concealed horizontal spaces created by an assembly of floor joists or trusses, and between concealed vertical and horizontal spaces such as occur at soffits, drop ceilings, cove ceilings and similar locations.

718.2.4 Stairways. Fireblocking shall be provided in concealed spaces between stair stringers at the top and bottom of the run. Enclosed spaces under stairways shall comply with Section 1011.7.3.

718.2.5 Ceiling and floor openings. Where required by Section 712.1.8, Exception 1 of Section 714.5.1.2 or Section 714.6, fireblocking of the annular space around vents, pipes, ducts, chimneys and fireplaces at ceilings and floor levels shall be installed with a material specifically tested in the form and manner intended for use to demonstrate its ability to remain in place and resist the free passage of flame and the products of combustion.

718.2.5.1 Factory-built chimneys and fireplaces. Factory-built chimneys and fireplaces shall be fireblocked in accordance with UL 103 and UL 127.

718.2.6 Exterior wall coverings. Fireblocking shall be installed within concealed spaces of exterior wall coverings and other exterior architectural elements where permitted to be of combustible construction as specified in Section 1405 or where erected with combustible frames. Fireblocking shall be installed at maximum intervals of 20 feet (6096 mm) in either dimension so that there will be no concealed space exceeding 100 square feet (9.3 m^2) between fireblocking. Where wood furring strips are used, they shall be of approved wood of natural decay resistance or preservative-treated wood. If noncontinuous, such elements shall have closed ends, with not less than 4 inches (102 mm) of separation between sections.

Exceptions:

1. Fireblocking of cornices is not required in single-family dwellings. Fireblocking of cornices of a two-family dwelling is required only at the line of dwelling unit separation.
2. Fireblocking shall not be required where the exterior wall covering is installed on noncombustible framing and the face of the exterior wall covering exposed to the concealed space is covered by one of the following materials:
   2.1. Aluminum having a minimum thickness of 0.019 inch (0.5 mm).
   2.2. Corrosion-resistant steel having a base metal thickness not less than 0.016 inch (0.4 mm) at any point.
   2.3. Other approved noncombustible materials.
3. Fireblocking shall not be required where the exterior wall covering has been tested in accordance with, and complies with the acceptance criteria of, NFPA 285. The exterior wall covering shall be installed as tested in accordance with NFPA 285.

718.2.7 Concealed sleeper spaces. Where wood sleepers are used for laying wood flooring on masonry or concrete fire-resistance-rated floors, the space between the floor slab and the underside of the wood flooring shall be filled with an approved material to resist the free passage of flame and products of combustion or fireblocked in such a manner that open spaces under the flooring shall not exceed 100 square feet (9.3 m^2) in area and such space shall be filled solidly under permanent partitions so that communication under the flooring between adjoining rooms shall not occur.

Exceptions:

1. Fireblocking is not required for slab-on-grade floors in gymnasiums.
2. Fireblocking is required only at the juncture of each alternate lane and at the ends of each lane in a bowling facility.

718.3 Draftstops in floors. Draftstops shall be installed to subdivide floor/ceiling assemblies where required by Section 708.4.3. In other than Group R occupancies, draftstops shall be installed to subdivide combustible floor/ceiling assemblies so that horizontal floor areas do not exceed 1,000 square feet (93 m^2).

Exception: Buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.

718.3.1 Draftstops material. Draftstops material shall be not less than $^1/_2$-inch (12.7 mm) gypsum board, $^3/_8$-inch (9.5 mm) wood structural panel, $^3/_8$-inch (9.5 mm) particleboard, 1-inch (25-mm) nominal lumber, cement fiberboard, batts or blankets of mineral wool or glass fiber, or other approved materials adequately supported. The integrity of draftstops shall be maintained.

718.4 Draftstops in attics. Draftstops shall be installed to subdivide attic spaces where required by Section 708.4.3. In other than Group R, draftstops shall be installed to subdivide combustible attic spaces and combustible concealed roof spaces such that any horizontal area does not exceed 3,000 square feet (279 m^2). Ventilation of concealed roof spaces shall be maintained in accordance with Section 1202.2.1.

Exception: Buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.

718.4.1 Draftstops material. Materials utilized for draftstops of attic spaces shall comply with Section 718.3.1.

718.4.1.1 Openings. Openings in the partitions shall be protected by self-closing doors with automatic latches constructed as required for the partitions.

718.5 Combustible materials in concealed spaces in Type I or II construction. Combustible materials shall not be permitted in concealed spaces of buildings of Type I or II construction.

Exceptions:

1. Combustible materials in accordance with Section 603.
2. Combustible materials exposed within plenums complying with the *California Mechanical Code*.
3. Class A interior finish materials classified in accordance with Section 803.

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4. Combustible piping within partitions or shaft enclosures installed in accordance with the provisions of this code.
5. Combustible piping within concealed ceiling spaces installed in accordance with the *California Mechanical Code* and the *California Plumbing Code*.
6. Combustible insulation and covering on pipe and tubing, installed in concealed spaces other than plenums, complying with Section 720.7.

SECTION 719—FIRE-RESISTANCE REQUIREMENTS FOR PLASTER

719.1 Thickness of plaster. The minimum thickness of gypsum plaster or Portland cement plaster used in a fire-resistance-rated system shall be determined by the prescribed fire tests. The plaster thickness shall be measured from the face of the lath where applied to gypsum lath or metal lath.

719.2 Plaster equivalents. For fire-resistance purposes, $^1/_2$ inch (12.7 mm) of unsanded gypsum plaster shall be deemed equivalent to $^3/_4$ inch (19.1 mm) of one-to-three gypsum sand plaster or 1 inch (25 mm) of Portland cement sand plaster.

719.3 Noncombustible furring. In buildings of Types I and II construction, plaster shall be applied directly on concrete or masonry or on approved noncombustible plastering base and furring.

719.4 Double reinforcement. Plaster protection more than 1 inch (25 mm) in thickness shall be reinforced with an additional layer of approved lath embedded not less than $^3/_4$ inch (19.1 mm) from the outer surface and fixed securely in place.

Exception: Solid plaster partitions or where otherwise determined by fire tests.

719.5 Plaster alternatives for concrete. In reinforced concrete construction, gypsum plaster or Portland cement plaster is permitted to be substituted for $^1/_2$ inch (12.7 mm) of the required poured concrete protection, except that a minimum thickness of $^3/_8$ inch (9.5 mm) of poured concrete shall be provided in reinforced concrete floors and 1 inch (25 mm) in reinforced concrete columns in addition to the plaster finish. The concrete base shall be prepared in accordance with Section 2510.7.

SECTION 720—THERMAL- AND SOUND-INSULATING MATERIALS

720.1 General. Insulating materials shall comply with the requirements of this section. Where a flame spread index or a smoke-developed index is specified in this section, such index shall be determined in accordance with ASTM E84 or UL 723. Any material that is subject to an increase in flame spread index or smoke-developed index beyond the limits herein established through the effects of age, moisture or other atmospheric conditions shall not be permitted. Insulating materials, when tested in accordance with the requirements of this section, shall include facings, when used, such as vapor retarders, vapor permeable membranes and similar coverings, and all layers of single and multilayer reflective foil insulation and similar materials.

Exceptions:

1. Fiberboard insulation shall comply with Chapter 23.
2. Foam plastic insulation shall comply with Chapter 26.
3. Duct and pipe insulation and duct and pipe coverings and linings in plenums shall comply with the *California Mechanical Code.*
4. All layers of single and multilayer reflective plastic core insulation shall comply with Section 2614.

720.2 Concealed installation. Insulating materials, where concealed as installed in buildings of any type of construction, shall have a flame spread index of not more than 25 and a smoke-developed index of not more than 450.

Exception: Cellulosic fiber loose-fill insulation complying with the requirements of Section 720.6 shall not be required to meet a flame spread index requirement but shall be required to meet a smoke-developed index of not more than 450 when tested in accordance with CAN/ULC S102.2.

720.2.1 Facings. Where such materials are installed in concealed spaces in buildings of Type III, IV or V construction, the flame spread and smoke-developed limitations do not apply to facings, coverings, and layers of reflective foil insulation that are installed behind and in substantial contact with the unexposed surface of the ceiling, wall or floor finish.

Exception: All layers of single and multilayer reflective plastic core insulation shall comply with Section 2614.

720.3 Exposed installation. Insulating materials, where exposed as installed in buildings of any type of construction, shall have a flame spread index of not more than 25 and a smoke-developed index of not more than 450.

Exception: Cellulosic fiber loose-fill insulation complying with the requirements of Section 720.6 shall not be required to meet a flame spread index requirement but shall be required to meet a smoke-developed index of not more than 450 when tested in accordance with CAN/ULC S102.2.

720.3.1 Attic floors. Exposed insulation materials installed on attic floors shall have a critical radiant flux of not less than 0.12 watt per square centimeter when tested in accordance with ASTM E970.

720.4 Loose-fill insulation. Loose-fill insulation materials that cannot be mounted in the ASTM E84 or UL 723 apparatus without a screen or artificial supports shall comply with the flame spread and smoke-developed limits of Sections 720.2 and 720.3 when tested in accordance with CAN/ULC S102.2.

Exception: Cellulosic fiber loose-fill insulation shall not be required to meet a flame spread index requirement when tested in accordance with CAN/ULC S102.2, provided that such insulation has a smoke-developed index of not more than 450 and complies with the requirements of Section 720.6.

720.5 Roof insulation. The use of combustible roof insulation not complying with Sections 720.2 and 720.3 shall be permitted in any type of construction provided that insulation is covered with approved roof coverings directly applied thereto.

720.6 Cellulosic fiber loose-fill insulation and self-supported spray-applied cellulosic insulation. Cellulosic fiber loose-fill insulation and self-supported spray-applied cellulosic insulation shall comply with CPSC 16 CFR Parts 1209 and 1404. Each package of such insulating material shall be clearly labeled in accordance with CPSC 16 CFR Parts 1209 and 1404.

720.7 Insulation and covering on pipe and tubing. Insulation and covering on pipe and tubing shall have a flame spread index of not more than 25 and a smoke-developed index of not more than 450.

Exception: Insulation and covering on pipe and tubing installed in plenums shall comply with the *California Mechanical Code*.

SECTION 721—PRESCRIPTIVE FIRE RESISTANCE

721.1 General. The provisions of this section contain prescriptive details of fire-resistance-rated building elements, components or assemblies. The materials of construction specified in Tables 721.1(1), 721.1(2) and 721.1(3) shall be assumed to have the fire-resistance ratings prescribed therein. Where materials that change the capacity for heat dissipation are incorporated into a fire-resistance-rated assembly, fire test results or other substantiating data shall be made available to the building official to show that the required fire-resistance-rating time period is not reduced.

TABLE 721.1(1)—MINIMUM PROTECTION OF STRUCTURAL PARTS BASED ON TIME PERIODS FOR VARIOUS NONCOMBUSTIBLE INSULATING MATERIALS[m]

STRUCTURAL PARTS TO BE PROTECTED	ITEM NUMBER	INSULATING MATERIAL USED	MINIMUM THICKNESS OF INSULATING MATERIAL FOR THE FOLLOWING FIRE-RESISTANCE PERIODS (inches)			
			4 hours	3 hours	2 hours	1 hour
1. Steel columns and all of primary trusses	1-1.1	Carbonate, lightweight and sand-lightweight aggregate concrete, members 6" × 6" or greater (not including sandstone, granite and siliceous gravel).[a]	$2^1/_2$	2	$1^1/_2$	1
	1-1.2	Carbonate, lightweight and sand-lightweight aggregate concrete, members 8" × 8" or greater (not including sandstone, granite and siliceous gravel).[a]	2	$1^1/_2$	1	1
	1-1.3	Carbonate, lightweight and sand-lightweight aggregate concrete, members 12" × 12" or greater (not including sandstone, granite and siliceous gravel).[a]	$1^1/_2$	1	1	1
	1-1.4	Siliceous aggregate concrete and concrete excluded in Item 1-1.1, members 6" × 6" or greater.[a]	3	2	$1^1/_2$	1
	1-1.5	Siliceous aggregate concrete and concrete excluded in Item 1-1.1, members 8" × 8" or greater.[a]	$2^1/_2$	2	1	1
	1-1.6	Siliceous aggregate concrete and concrete excluded in Item 1-1.1, members 12" × 12" or greater.[a]	2	1	1	1
	1-2.1	Clay or shale brick with brick and mortar fill.[a]	$3^3/_4$	—	—	$2^1/_4$
	1-3.1	4" hollow clay tile in two 2" layers; $^1/_2$" mortar between tile and column; $^3/_8$" metal mesh 0.046" wire diameter in horizontal joints; tile fill.[a]	4	—	—	—
	1-3.2	2" hollow clay tile; $^3/_4$" mortar between tile and column; $^3/_8$" metal mesh 0.046" wire diameter in horizontal joints; limestone concrete fill[a]; plastered with $^3/_4$" gypsum plaster.	3	—	—	—
	1-3.3	2" hollow clay tile with outside wire ties 0.08" diameter at each course of tile or $^3/_8$" metal mesh 0.046" diameter wire in horizontal joints; limestone or trap-rock concrete fill[a] extending 1" outside column on all sides.	—	—	3	—
	1-3.4	2" hollow clay tile with outside wire ties 0.08" diameter at each course of tile with or without concrete fill; $^3/_4$" mortar between tile and column.	—	—	—	2
	1-4.1	Cement plaster over metal lath wire tied to $^3/_4$" cold-rolled vertical channels with 0.049" (No. 18 B.W. gage) wire ties spaced 3" to 6" on center. Plaster mixed 1: $2^1/_2$ by volume, cement to sand.	—	—	$2^1/_2$[b]	$^7/_8$
	1-5.1	Vermiculite concrete, 1:4 mix by volume over paper-backed wire fabric lath wrapped directly around column with additional 2" × 2" 0.065"/0.065" (No. 16/16 B.W. gage) wire fabric placed $^3/_4$" from outer concrete surface. Wire fabric tied with 0.049" (No. 18B.W. gage) wire spaced 6" on center for inner layer and 2" on center for outer layer.	2	—	—	—

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TABLE 721.1(1)—MINIMUM PROTECTION OF STRUCTURAL PARTS BASED ON TIME PERIODS FOR VARIOUS NONCOMBUSTIBLE INSULATING MATERIALS[m]—continued

STRUCTURAL PARTS TO BE PROTECTED	ITEM NUMBER	INSULATING MATERIAL USED	MINIMUM THICKNESS OF INSULATING MATERIAL FOR THE FOLLOWING FIRE-RESISTANCE PERIODS (inches)			
			4 hours	3 hours	2 hours	1 hour
1. Steel columns and all of primary trusses—continued	1-6.1	Perlite or vermiculite gypsum plaster over metal lath wrapped around column and furred $1^1/_4$" from column flanges. Sheets lapped at ends and tied at 6" intervals with 0.049" (No. 18 B.W. gage) tie wire. Plaster pushed through to flanges.	$1^1/_2$	1	—	—
	1-6.2	Perlite or vermiculite gypsum plaster over self-furring metal lath wrapped directly around column, lapped 1" and tied at 6" intervals with 0.049" (No. 18 B.W. gage) wire.	$1^3/_4$	$1^3/_8$	1	—
	1-6.3	Perlite or vermiculite gypsum plaster on metal lath applied to $^3/_4$" cold-rolled channels spaced 24" apart vertically and wrapped flatwise around column.	$1^1/_2$	—	—	—
	1-6.4	Perlite or vermiculite gypsum plaster over two layers of $^1/_2$" plain full-length gypsum lath applied tight to column flanges. Lath wrapped with 1" hexagonal mesh of No. 20-gage wire and tied with doubled 0.035" diameter (No. 18 B.W. gage) wire ties spaced 23" on center. For three-coat work, the plaster mix for the second coat shall not exceed 100 pounds of gypsum to $2^1/_2$ cubic feet of aggregate for the 3-hour system.	$2^1/_2$	2	—	—
	1-6.5	Perlite or vermiculite gypsum plaster over one layer of $^1/_2$" plain full-length gypsum lath applied tight to column flanges. Lath tied with doubled 0.049" (No. 18 B.W. gage) wire ties spaced 23" on center and scratch coat wrapped with 1" hexagonal mesh 0.035" (No. 20 B.W. gage) wire fabric. For three-coat work, the plaster mix for the second coat shall not exceed 100 pounds of gypsum to $2^1/_2$ cubic feet of aggregate.	—	2	—	—
	1-7.1	Multiple layers of $^1/_2$" gypsum wallboard[c] adhesively[d] secured to column flanges and successive layers. Wallboard applied without horizontal joints. Corner edges of each layer staggered. Wallboard layer below outer layer secured to column with doubled 0.049" (No. 18 B.W. gage) steel wire ties spaced 15" on center. Exposed corners taped and treated.	—	—	2	1
	1-7.2	Three layers of $^5/_8$" Type X gypsum wallboard.[c] First and second layer held in place by $^1/_8$" diameter by $1^3/_8$" long ring shank nails with $^5/_{16}$" diameter heads spaced 24" on center at corners. Middle layer also secured with metal straps at mid-height and 18" from each end, and by metal corner bead at each corner held by the metal straps. Third layer attached to corner bead with 1" long gypsum wallboard screws spaced 12" on center.	—	—	$1^7/_8$	—
	1-7.3	Three layers of $^5/_8$" Type X gypsum wallboard,[c] each layer screw attached to $1^5/_8$" steel studs 0.018" thick (No. 25 carbon sheet steel gage) at each corner of column. Middle layer also secured with 0.049" (No. 18 B.W. gage) double-strand steel wire ties, 24" on center. Screws are No. 6 by 1" spaced 24" on center for inner layer, No. 6 by $1^5/_8$" spaced 12" on center for middle layer and No. 8 by $2^1/_4$" spaced 12" on center for outer layer.	—	$1^7/_8$	—	—

TABLE 721.1(1)—MINIMUM PROTECTION OF STRUCTURAL PARTS BASED ON TIME PERIODS FOR VARIOUS NONCOMBUSTIBLE INSULATING MATERIALS[m]—continued

STRUCTURAL PARTS TO BE PROTECTED	ITEM NUMBER	INSULATING MATERIAL USED	MINIMUM THICKNESS OF INSULATING MATERIAL FOR THE FOLLOWING FIRE-RESISTANCE PERIODS (inches)			
			4 hours	3 hours	2 hours	1 hour
1. Steel columns and all of primary trusses—continued	1-8.1	Wood-fibered gypsum plaster mixed 1:1 by weight gypsum-to-sand aggregate applied over metal lath. Lath lapped 1" and tied 6" on center at all end, edges and spacers with 0.049" (No. 18 B.W. gage) steel tie wires. Lath applied over $^1/_2$" spacers made of $^3/_4$" furring channel with 2" legs bent around each corner. Spacers located 1" from top and bottom of member and not greater than 40" on center and wire tied with a single strand of 0.049" (No. 18 B.W. gage) steel tie wires. Corner bead tied to the lath at 6" on center along each corner to provide plaster thickness.	—	—	$1^5/_8$	—
	1-9.1	Minimum W8x35 wide flange steel column (w/d ≥ 0.75) with each web cavity filled even with the flange tip with normal weight carbonate or siliceous aggregate concrete (3,000 psi minimum compressive strength with 145 pcf ± 3 pcf unit weight). Reinforce the concrete in each web cavity with a minimum No. 4 deformed reinforcing bar installed vertically and centered in the cavity, and secured to the column web with a minimum No. 2 horizontal deformed reinforcing bar welded to the web every 18" on center vertically. As an alternative to the No. 4 rebar, $^3/_4$" diameter by 3" long headed studs, spaced at 12" on center vertically, shall be welded on each side of the web mid-way between the column flanges.	—	—	—	See Note n
2. Webs or flanges of steel beams and girders	2-1.1	Carbonate, lightweight and sand-lightweight aggregate concrete (not including sandstone, granite and siliceous gravel) with 3" or finer metal mesh placed 1" from the finished surface anchored to the top flange and providing not less than 0.025 square inch of steel area per foot in each direction.	2	$1^1/_2$	1	1
	2-1.2	Siliceous aggregate concrete and concrete excluded in Item 2-1.1 with 3" or finer metal mesh placed 1" from the finished surface anchored to the top flange and providing not less than 0.025 square inch of steel area per foot in each direction.	$2^1/_2$	2	$1^1/_2$	1
	2-2.1	Cement plaster on metal lath attached to $^3/_4$" cold-rolled channels with 0.04" (No. 18 B.W. gage) wire ties spaced 3" to 6" on center. Plaster mixed 1: $2^1/_2$ by volume, cement to sand.	—	—	$2^1/_2$[b]	$^7/_8$
	2-3.1	Vermiculite gypsum plaster on a metal lath cage, wire tied to 0.165" diameter (No. 8 B.W. gage) steel wire hangers wrapped around beam and spaced 16" on center. Metal lath ties spaced approximately 5" on center at cage sides and bottom.	—	$^7/_8$	—	—

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TABLE 721.1(1)—MINIMUM PROTECTION OF STRUCTURAL PARTS BASED ON TIME PERIODS FOR VARIOUS NONCOMBUSTIBLE INSULATING MATERIALS[m]—continued

STRUCTURAL PARTS TO BE PROTECTED	ITEM NUMBER	INSULATING MATERIAL USED	MINIMUM THICKNESS OF INSULATING MATERIAL FOR THE FOLLOWING FIRE-RESISTANCE PERIODS (inches)			
			4 hours	3 hours	2 hours	1 hour
2. Webs or flanges of steel beams and girders—continued	2-4.1	Two layers of $^5/_8$" Type X gypsum wallboard[c] are attached to U-shaped brackets spaced 24" on center. 0.018" thick (No. 25 carbon sheet steel gage) $1^5/_8$" deep by 1" galvanized steel runner channels are first installed parallel to and on each side of the top beam flange to provide a $^1/_2$" clearance to the flange. The channel runners are attached to steel deck or concrete floor construction with approved fasteners spaced 12" on center. U-shaped brackets are formed from members identical to the channel runners. At the bent portion of the U-shaped bracket, the flanges of the channel are cut out so that $1^5/_8$"-deep corner channels can be inserted without attachment parallel to each side of the lower flange. As an alternative, 0.021" thick (No. 24 carbon sheet steel gage) 1" × 2" runner and corner angles shall be used in lieu of channels, and the web cutouts in the U-shaped brackets shall not be required. Each angle is attached to the bracket with $^1/_2$"-long No. 8 self-drilling screws. The vertical legs of the U-shaped bracket are attached to the runners with one $^1/_2$"-long No. 8 self-drilling screw. The completed steel framing provides a $2\ ^1/_8$" and $1^1/_2$" space between the inner layer of wallboard and the sides and bottom of the steel beam, respectively. The inner layer of wallboard is attached to the top runners and bottom corner channels or corner angles with $1^1/_4$"-long No. 6 self-drilling screws spaced 16" on center. The outer layer of wallboard is applied with $1\ ^3/_4$"-long No. 6 self-drilling screws spaced 8" on center. The bottom corners are reinforced with metal corner beads.	—	—	$1^1/_4$	—
	2-4.2	Three layers of $^5/_8$" Type X gypsum wallboard[c] attached to a steel suspension system as described immediately above utilizing the 0.018" thick (No. 25 carbon sheet steel gage) 1" × 2" lower corner angles. The framing is located so that a $2^1/_8$" and 2" space is provided between the inner layer of wallboard and the sides and bottom of the beam, respectively. The first two layers of wallboard are attached as described immediately above. A layer of 0.035" thick (No. 20 B.W. gage) 1" hexagonal galvanized wire mesh is applied under the soffit of the middle layer and up the sides approximately 2". The mesh is held in position with the No. 6 $1^5/_8$"-long screws installed in the vertical leg of the bottom corner angles. The outer layer of wallboard is attached with No. 6 $2^1/_4$"-long screws spaced 8" on center. One screw is installed at the mid-depth of the bracket in each layer. Bottom corners are finished as described above.	—	$1^7/_8$	—	—
3. Bonded pretensioned reinforcement in prestressed concrete[e]	3-1.1	Carbonate, lightweight, sand-lightweight and siliceous[f] aggregate concrete				
		Beams or girders	4[g]	3[g]	$2^1/_2$	$1^1/_2$
		Solid[h]		2	$1^1/_2$	1
4. Bonded or unbonded post-tensioned tendons in prestressed concrete[e, i]	4-1.1	Carbonate, lightweight, sand-lightweight and siliceous[f] aggregate concrete Unrestrained members:				
		Solid slabs[h]	—	2	$1^1/_2$	—
		Beams and girders[j]				
		8" wide		$4^1/_2$	$2^1/_2$	$1^3/_4$
		greater than 12" wide	3	$2^1/_2$	2	$1^1/_2$
	4-1.2	Carbonate, lightweight, sand-lightweight and siliceous aggregate Restrained members:[k]				
		Solid slabs[h]	$1^1/_4$	1	$^3/_4$	—
		Beams and girders[j]				
		8" wide	$2^1/_2$	2	$1^3/_4$	—
		greater than 12" wide	2	$1^3/_4$	$1^1/_2$	—

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TABLE 721.1(1)—MINIMUM PROTECTION OF STRUCTURAL PARTS BASED ON TIME PERIODS FOR VARIOUS NONCOMBUSTIBLE INSULATING MATERIALS[m]—continued

STRUCTURAL PARTS TO BE PROTECTED	ITEM NUMBER	INSULATING MATERIAL USED	MINIMUM THICKNESS OF INSULATING MATERIAL FOR THE FOLLOWING FIRE-RESISTANCE PERIODS (inches)			
			4 hours	3 hours	2 hours	1 hour
5. Reinforcing steel in reinforced concrete columns, beams girders and trusses	5-1.1	Carbonate, lightweight and sand-lightweight aggregate concrete, members 12" or larger, square or round. (Size limit does not apply to beams and girders monolithic with floors.)	$1^1/_2$	$1^1/_2$	$1^1/_2$	$1^1/_2$
		Siliceous aggregate concrete, members 12" or larger, square or round. (Size limit does not apply to beams and girders monolithic with floors.)	2	$1^1/_2$	$1^1/_2$	$1^1/_2$
6. Reinforcing steel in reinforced concrete joists[l]	6-1.1	Carbonate, lightweight and sand-lightweight aggregate concrete	$1^1/_4$	$1^1/_4$	1	$^3/_4$
	6-1.2	Siliceous aggregate concrete	$1^3/_4$	$1^1/_2$	1	$^3/_4$
7. Reinforcing and tie rods in floor and roof slabs[l]	7-1.1	Carbonate, lightweight and sand-lightweight aggregate concrete	1	1	$^3/_4$	$^3/_4$
	7-1.2	Siliceous aggregate concrete	$1^1/_4$	1	1	$^3/_4$

For SI: 1 inch = 25.4 mm, 1 square inch = 645.2 mm^2, 1 cubic foot = 0.0283 m^3, 1 pound per cubic foot = 16.02 kg/m^3.

a. Reentrant parts of protected members to be filled solidly.
b. Two layers of equal thickness with a $^3/_4$-inch airspace between.
c. For all of the construction with gypsum wallboard described in Table 721.1(1), gypsum base for veneer plaster of the same size, thickness and core type shall be permitted to be substituted for gypsum wallboard, provided that attachment is identical to that specified for the wallboard and the joints on the face layer are reinforced, and the entire surface is covered with not less than $^1/_{16}$-inch gypsum veneer plaster.
d. An approved adhesive qualified under ASTM E119 or UL 263.
e. Where lightweight or sand-lightweight concrete having an oven-dry weight of 110 pounds per cubic foot or less is used, the tabulated minimum cover shall be permitted to be reduced 25 percent, except that the reduced cover shall be not less than $^3/_4$ inch in slabs or $1^1/_2$ inches in beams or girders.
f. For solid slabs of siliceous aggregate concrete, increase tendon cover 20 percent.
g. Adequate provisions against spalling shall be provided by U-shaped or hooped stirrups spaced not to exceed the depth of the member with a clear cover of 1 inch.
h. Prestressed slabs shall have a thickness not less than that required in Table 721.1(3) for the respective fire-resistance time period.
i. Fire coverage and end anchorages shall be as follows: Cover to the prestressing steel at the anchor shall be $^1/_2$ inch greater than that required away from the anchor. Minimum cover to steel-bearing plate shall be 1 inch in beams and $^3/_4$ inch in slabs.
j. For beam widths between 8 inches and 12 inches, cover thickness shall be permitted to be determined by interpolation.
k. Interior spans of continuous slabs, beams and girders shall be permitted to be considered restrained.
l. For use with concrete slabs having a comparable fire endurance where members are framed into the *structure* in such a manner as to provide equivalent performance to that of monolithic concrete construction.
m. Generic fire-resistance ratings (those not designated as PROPRIETARY* in the listing) in GA-600 shall be accepted as if herein specified.
n. Additional insulating material is not required on the exposed outside face of the column flange to achieve a 1-hour fire-resistance rating.

TABLE 721.1(2)—RATED FIRE-RESISTANCE PERIODS FOR VARIOUS WALLS AND PARTITIONS[a, o, p]

MATERIAL	ITEM NUMBER	CONSTRUCTION	MINIMUM FINISHED THICKNESS FACE-TO-FACE[b] (inches)			
			4 hours	3 hours	2 hours	1 hour
1. Brick of clay or shale	1-1.1	Solid brick of clay or shale.[c]	6	4.9	3.8	2.7
	1-1.2	Hollow brick, not filled.	5.0	4.3	3.4	2.3
	1-1.3	Hollow brick unit wall, grout or filled with perlite vermiculite or expanded shale aggregate.	6.6	5.5	4.4	3.0
	1-2.1	4" nominal thick units not less than 75 percent solid backed with a hat-shaped metal furring channel $^3/_4$" thick formed from 0.021" sheet metal attached to the brick wall on 24" centers with approved fasteners, and $^1/_2$" Type X gypsum wallboard attached to the metal furring strips with 1"-long Type S screws spaced 8" on center.	—	—	5[d]	—
2. Combination of clay brick and load-bearing hollow clay tile	2-1.1	4" solid brick and 4" tile (not less than 40 percent solid).	—	8	—	—
	2-1.2	4" solid brick and 8" tile (not less than 40 percent solid).	12	—	—	—
3. Concrete masonry units	3-1.1[f, g]	Expanded slag or pumice.	4.7	4.0	3.2	2.1
	3-1.2[f, g]	Expanded clay, shale or slate.	5.1	4.4	3.6	2.6
	3-1.3[f]	Limestone, cinders or air-cooled slag.	5.9	5.0	4.0	2.7
	3-1.4[f, g]	Calcareous or siliceous gravel.	6.2	5.3	4.2	2.8

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TABLE 721.1(2)—RATED FIRE-RESISTANCE PERIODS FOR VARIOUS WALLS AND PARTITIONS[a, o, p]—continued						
MATERIAL	ITEM NUMBER	CONSTRUCTION	MINIMUM FINISHED THICKNESS FACE-TO-FACE[b] (inches)			
			4 hours	3 hours	2 hours	1 hour
4. Solid concrete[h, i]	4-1.1	Siliceous aggregate concrete.	7.0	6.2	5.0	3.5
		Carbonate aggregate concrete.	6.6	5.7	4.6	3.2
		Sand-lightweight concrete.	5.4	4.6	3.8	2.7
		Lightweight concrete.	5.1	4.4	3.6	2.5
5. Glazed or unglazed facing tile, nonload-bearing	5-1.1	One 2" unit cored 15 percent maximum and one 4" unit cored 25 percent maximum with $^3/_4$" mortar-filled collar joint. Unit positions reversed in alternate courses.	—	$6^3/_8$	—	—
	5-1.2	One 2" unit cored 15 percent maximum and one 4" unit cored 40 percent maximum with $^3/_4$" mortar-filled collar joint. Unit positions side with $^3/_4$" gypsum plaster. Two wythes tied together every fourth course with No. 22 gage corrugated metal ties.	—	$6^3/_4$	—	—
	5-1.3	One unit with three cells in wall thickness, cored 29 percent maximum.	—	—	6	—
	5-1.4	One 2" unit cored 22 percent maximum and one 4" unit cored 41 percent maximum with $^1/_4$" mortar-filled collar joint. Two wythes tied together every third course with 0.030"(No. 22 galvanized sheet steel gage) corrugated metal ties.	—	—	6	—
	5-1.5	One 4" unit cored 25 percent maximum with $^3/_4$" gypsum plaster on one side.	—	—	$4^3/_4$	—
	5-1.6	One 4" unit with two cells in wall thickness, cored 22 percent maximum.	—	—	—	4
	5-1.7	One 4" unit cored 30 percent maximum with $^3/_4$" vermiculite gypsum plaster on one side.	—	—	$4^1/_2$	—
	5-1.8	One 4" unit cored 39 percent maximum with $^3/_4$" gypsum plaster on one side.	—	—	—	$4^1/_2$
6. Solid gypsum plaster	6-1.1	$^3/_4$" by 0.055" (No. 16 carbon sheet steel gage) vertical cold-rolled channels, 16" on center with 2.6-pound flat metal lath applied to one face and tied with 0.049" (No. 18 B.W. gage) wire at 6" spacing. Gypsum plaster each side mixed 1:2 by weight, gypsum to sand aggregate.	—	—	—	2[d]
	6-1.2	$^3/_4$" by 0.05" (No. 16 carbon sheet steel gage) cold-rolled channels 16" on center with metal lath applied to one face and tied with 0.049" (No. 18 B.W. gage) wire at 6" spacing. Perlite or vermiculite gypsum plaster each side. For three-coat work, the plaster mix for the second coat shall not exceed 100 pounds of gypsum to $2^1/_2$ cubic feet of aggregate for the 1-hour system.	—	—	$2^1/_2$[d]	2[d]
	6-1.3	$^3/_4$" by 0.055" (No. 16 carbon sheet steel gage) vertical cold-rolled channels, 16" on center with $^3/_8$" gypsum lath applied to one face and attached with sheet metal clips. Gypsum plaster each side mixed 1:2 by weight, gypsum to sand aggregate.	—	—	—	2[d]
	6-2.1	Studless with $^1/_2$" full-length plain gypsum lath and gypsum plaster each side. Plaster mixed 1:1 for scratch coat and 1:2 for brown coat, by weight, gypsum to sand aggregate.	—	—	—	2[d]
	6-2.2	Studless with $^1/_2$" full-length plain gypsum lath and perlite or vermiculite gypsum plaster each side.	—	—	$2^1/_2$[d]	2[d]
	6-2.3	Studless partition with $^3/_8$" rib metal lath installed vertically adjacent edges tied 6" on center with No. 18 gage wire ties, gypsum plaster each side mixed 1:2 by weight, gypsum to sand aggregate.	—	—	—	2[d]
7. Solid perlite and Portland cement	7-1.1	Perlite mixed in the ratio of 3 cubic feet to 100 pounds of Portland cement and machine applied to stud side of $1^1/_2$" mesh by 0.058-inch (No. 17 B.W. gage) paper-backed woven wire fabric lath wire-tied to 4"-deep steel trussed wire[j] studs 16" on center. Wire ties of 0.049" (No. 18 B.W. gage) galvanized steel wire 6" on center vertically.	—	—	$3^1/_8$[d]	—

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TABLE 721.1(2)—RATED FIRE-RESISTANCE PERIODS FOR VARIOUS WALLS AND PARTITIONS[a, o, p]—continued

MATERIAL	ITEM NUMBER	CONSTRUCTION	MINIMUM FINISHED THICKNESS FACE-TO-FACE[b] (inches)			
			4 hours	3 hours	2 hours	1 hour
8. Solid neat wood fibered gypsum plaster	8-1.1	$^3/_4$" by 0.055-inch (No. 16 carbon sheet steel gage) cold-rolled channels, 12" on center with 2.5-pound flat metal lath applied to one face and tied with 0.049" (No. 18 B.W. gage) wire at 6" spacing. Neat gypsum plaster applied each side.	—	—	2[d]	—
9. Solid wall-board partition	9-1.1	One full-length layer $^1/_2$" Type X gypsum wallboard[e] laminated to each side of 1" full-length V-edge gypsum coreboard with approved laminating compound. Vertical joints of face layer and coreboard staggered not less than 3".	—	—	2[d]	—
10. Hollow (studless) gypsum wallboard partition	10-1.1	One full-length layer of $^5/_8$" Type X gypsum wallboard[e] attached to both sides of wood or metal top and bottom runners laminated to each side of 1" × 6" full-length gypsum coreboard ribs spaced 2" on center with approved laminating compound. Ribs centered at vertical joints of face plies and joints staggered 24" in opposing faces. Ribs shall be permitted to be recessed 6" from the top and bottom.	—	—	—	$2^1/_4$[d]
	10-1.2	1" regular gypsum V-edge full-length backing board attached to both sides of wood or metal top and bottom runners with nails or $1^5/_8$" drywall screws at 24" on center. Minimum width of runners $1^5/_8$". Face layer of $^1/_2$" regular full-length gypsum wallboard laminated to outer faces of backing board with approved laminating compound.	—	—	$4^5/_8$[d]	—
11. Noncombustible studs—interior partition with plaster each side	11-1.1	$3^1/_4$" × 0.044" (No. 18 carbon sheet steel gage) steel studs spaced 24" on center. $^5/_8$" gypsum plaster on metal lath each side mixed 1:2 by weight, gypsum to sand aggregate.	—	—	—	$4^3/_4$[d]
	11-1.2	$3^3/_8$" × 0.055" (No. 16 carbon sheet steel gage) approved nailable[k] studs spaced 24" on center. $^5/_8$" neat gypsum wood-fibered plaster each side over $^3/_8$" rib metal lath nailed to studs with 6d common nails, 8" on center. Nails driven $1^1/_4$" and bent over.	—	—	$5^5/_8$	—
	11-1.3	4" × 0.044" (No. 18 carbon sheet steel gage) channel-shaped steel studs at 16" on center. On each side approved resilient clips pressed onto stud flange at 16" vertical spacing, $^1/_4$" pencil rods snapped into or wire tied onto outer loop of clips, metal lath wire-tied to pencil rods at 6" intervals, 1" perlite gypsum plaster, each side.	—	$7^5/_8$[d]	—	—
	11-1.4	$2^1/_2$" × 0.044" (No. 18 carbon sheet steel gage) steel studs spaced 16" on center. Wood fibered gypsum plaster mixed 1:1 by weight gypsum to sand aggregate applied on $^3/_4$-pound metal lath wire tied to studs, each side. $^3/_4$" plaster applied over each face, including finish coat.	—	—	$4^1/_4$[d]	—
12. Wood studs—interior partition with plaster each side	12-1.1[l, m]	2" × 4" wood studs 16" on center with $^5/_8$" gypsum plaster on metal lath. Lath attached by 4d common nails bent over or No. 14 gage by $1^1/_4$" by $^3/_4$" crown width staples spaced 6" on center. Plaster mixed 1:$1^1/_2$ for scratch coat and 1:3 for brown coat, by weight, gypsum to sand aggregate.	—	—	—	$5^1/_8$
	12-1.2[l]	2" × 4" wood studs 16" on center with metal lath and $^7/_8$" neat wood-fibered gypsum plaster each side. Lath attached by 6d common nails, 7" on center. Nails driven $1^1/_4$" and bent over.	—	—	$5^1/_2$[d]	—
	12-1.3[l]	2" × 4" wood studs 16" on center with $^3/_8$" perforated or plain gypsum lath and $^1/_2$" gypsum plaster each side. Lath nailed with $1^1/_8$" by No. 13 gage by $^{19}/_{64}$" head plasterboard blued nails, 4" on center. Plaster mixed 1:2 by weight, gypsum to sand aggregate.	—	—	—	$5^1/_4$
	12-1.4[l]	2" × 4" wood studs 16" on center with $^3/_8$" Type X gypsum lath and $^1/_2$" gypsum plaster each side. Lath nailed with $1^1/_8$" by No. 13 gage by $^{19}/_{64}$" head plasterboard blued nails, 5" on center. Plaster mixed 1:2 by weight, gypsum to sand aggregate.	—	—	—	$5^1/_4$

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TABLE 721.1(2)—RATED FIRE-RESISTANCE PERIODS FOR VARIOUS WALLS AND PARTITIONS[a, o, p]—continued

MATERIAL	ITEM NUMBER	CONSTRUCTION	MINIMUM FINISHED THICKNESS FACE-TO-FACE[b] (inches)			
			4 hours	3 hours	2 hours	1 hour
13. Noncombustible studs—interior partition with gypsum wallboard each side	13-1.1	0.018" (No. 25 carbon sheet steel gage) channel-shaped studs 24" on center with one full-length layer of $^5/_8$" Type X gypsum wallboard[e] applied vertically attached with 1"-long No. 6 dry wall screws to each stud. Screws are 8" on center around the perimeter and 12" on center on the intermediate stud. Where applied horizontally, the Type X gypsum wallboard shall be attached to 3$^5/_8$" studs and the horizontal joints shall be staggered with those on the opposite side. Screws for the horizontal application shall be 8" on center at vertical edges and 12" on center at intermediate studs.	—	—	—	2$^7/_8$[d]
	13-1.2	0.018" (No. 25 carbon sheet steel gage) channel-shaped studs 25" on center with two full-length layers of $^1/_2$" Type X gypsum wallboard[e] applied vertically each side. First layer attached with 1"-long, No. 6 drywall screws, 8" on center around the perimeter and 12" on center on the intermediate stud. Second layer applied with vertical joints offset one stud space from first layer using 1$^5/_8$" long, No. 6 drywall screws spaced 9" on center along vertical joints, 12" on center at intermediate studs and 24" on center along top and bottom runners.	—	—	3$^5/_8$[d]	—
	13-1.3	0.055" (No. 16 carbon sheet steel gage) approved nailable metal studs[e] 24" on center with full-length $^5/_8$" Type X gypsum wallboard[e] applied vertically and nailed 7" on center with 6d cement-coated common nails. Approved metal fastener grips used with nails at vertical butt joints along studs.	—	—	—	4$^7/_8$
14. Wood studs—interior partition with gypsum wallboard each side	14-1.1[h, m]	2" × 4" wood studs 16" on center with two layers of $^3/_8$" regular gypsum wallboard[e] each side, 4d cooler[n] or wallboard[n] nails at 8" on center first layer, 5d cooler[n] or wallboard[n] nails at 8" on center second layer with laminating compound between layers, joints staggered. First layer applied full length vertically, second layer applied horizontally or vertically.	—	—	—	5
	14-1.2[l, m]	2" × 4" wood studs 16" on center with two layers $^1/_2$" regular gypsum wallboard[e] applied vertically or horizontally each side[k], joints staggered. Nail base layer with 5d cooler[n] or wallboard[n] nails at 8" on center face layer with 8d cooler[n] or wallboard[n] nails at 8" on center.	—	—	—	5$^1/_2$
	14-1.3[l, m]	2" × 4" wood studs 24" on center with $^5/_8$" Type X gypsum wallboard[e] applied vertically or horizontally nailed with 6d cooler[n] or wallboard[n] nails at 7" on center with end joints on nailing members. Stagger joints each side.	—	—	—	4$^3/_4$
	14-1.4[l]	2" × 4" fire-retardant-treated wood studs spaced 24" on center with one layer of $^5/_8$" Type X gypsum wallboard[e] applied with face paper grain (long dimension) parallel to studs. Wallboard attached with 6d cooler[n] or wallboard[n] nails at 7" on center.	—	—	—	4$^3/_4$[d]
	14-1.5[l, m]	2" × 4" wood studs 16" on center with two layers $^5/_8$" Type X gypsum wallboard[e] each side. Base layers applied vertically and nailed with 6d cooler[n] or wallboard [n] nails at 9" on center. Face layer applied vertically or horizontally and nailed with 8d cooler[n] or wallboard[n] nails at 7" on center. For nail-adhesive application, base layers are nailed 6" on center. Face layers applied with coating of approved wallboard adhesive and nailed 12" on center.	—	—	6	—
	14-1.6[l]	2" × 3" fire-retardant-treated wood studs spaced 24" on center with one layer of $^5/_8$" Type X gypsum wallboard[e] applied with face paper grain (long dimension) at right angles to studs. Wallboard attached with 6d cement-coated box nails spaced 7" on center.	—	—	—	3$^5/_8$[d]

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TABLE 721.1(2)—RATED FIRE-RESISTANCE PERIODS FOR VARIOUS WALLS AND PARTITIONS[a, o, p]—continued						
MATERIAL	ITEM NUMBER	CONSTRUCTION	MINIMUM FINISHED THICKNESS FACE-TO-FACE[b] (inches)			
			4 hours	3 hours	2 hours	1 hour
15. Exterior or interior walls	15-1.1[l, m]	Exterior surface with $^3/_4$" drop siding over $^1/_2$" gypsum sheathing on 2" × 4" wood studs at 16" on center, interior surface treatment as required for 1-hour-rated exterior or interior 2" × 4" wood stud partitions. Gypsum sheathing nailed with 1 $^3/_4$" by No.11 gage by $^7/_{16}$" head galvanized nails at 8" on center. Siding nailed with 7d galvanized smooth box nails.	—	—	—	Varies
	15-1.2[l, m]	2" × 4" wood studs 16" on center with metal lath and $^3/_4$" cement plaster on each side. Lath attached with 6d common nails 7" on center driven to 1" minimum penetration and bent over. Plaster mix 1:4 for scratch coat and 1:5 for brown coat, by volume, cement to sand.	—	—	—	$5^3/_8$
	15-1.3[l, m]	2" × 4" wood studs 16" on center with $^7/_8$" cement plaster (measured from the face of studs) on the exterior surface with interior surface treatment as required for interior wood stud partitions in this table. Plaster mix 1:4 for scratch coat and 1:5 for brown coat, by volume, cement to sand.	—	—	—	Varies
	15-1.4	$3^5/_8$" No. 16 gage noncombustible studs 16" on center with $^7/_8$" cement plaster (measured from the face of the studs) on the exterior surface with interior surface treatment as required for interior, nonbearing, noncombustible stud partitions in this table. Plaster mix 1:4 for scratch coat and 1:5 for brown coat, by volume, cement to sand.	—	—	—	Varies[d]
	15-1.5[m]	$2^1/_4$" × $3^3/_4$" clay face brick with cored holes over $^1/_2$" gypsum sheathing on exterior surface of 2" × 4" wood studs at 16" on center and two layers $^5/_8$" Type X gypsum wallboard[e] on interior surface. Sheathing placed horizontally or vertically with vertical joints over studs nailed 6" on center with $1^3/_4$" × No. 11 gage by $^7/_{16}$" head galvanized nails. Inner layer of wallboard placed horizontally or vertically and nailed 8" on center with 6d cooler[n] or wallboard[n] nails. Outer layer of wallboard placed horizontally or vertically and nailed 8" on center with 8d cooler[n] or wallboard[n] nails. Joints staggered with vertical joints over studs. Outer layer joints taped and finished with compound. Nail heads covered with joint compound. 0.035 inch (No. 20 galvanized sheet gage) corrugated galvanized steel wall ties $^3/_4$" by $6^5/_8$" attached to each stud with two 8d cooler[n] or wallboard[n] nails every sixth course of bricks.	—	—	10	—
	15-1.6[l, m]	2" × 6" fire-retardant-treated wood studs 16" on center. Interior face has two layers of $^5/_8$" Type X gypsum with the base layer placed vertically and attached with 6d box nails 12"on center. The face layer is placed horizontally and attached with 8d box nails 8" on center at joints and 12" on center elsewhere. The exterior face has a base layer of $^5/_8$" Type X gypsum sheathing placed vertically with 6d box nails 8" on center at joints and 12" on center elsewhere. An approved building paper is next applied, followed by self-furred exterior lath attached with $2^1/_2$", No. 12 gage galvanized roofing nails with a $^3/_8$" diameter head and spaced 6" on center along each stud. Cement plaster consisting of a $^1/_2$" brown coat is then applied. The scratch coat is mixed in the proportion of 1:3 by weight, cement to sand with 10 pounds of hydrated lime and 3 pounds of approved additives or admixtures per sack of cement. The brown coat is mixed in the proportion of 1:4 by weight, cement to sand with the same amounts of hydrated lime and approved additives or admixtures used in the scratch coat.	—	—	$8^1/_4$	—

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TABLE 721.1(2)—RATED FIRE-RESISTANCE PERIODS FOR VARIOUS WALLS AND PARTITIONS[a, o, p]—continued

MATERIAL	ITEM NUMBER	CONSTRUCTION	MINIMUM FINISHED THICKNESS FACE-TO-FACE[b] (inches)			
			4 hours	3 hours	2 hours	1 hour
15. Exterior or interior walls—continued	15-1.7[l, m]	2" × 6" wood studs 16" on center. The exterior face has a layer of $^{5}/_{8}$" Type X gypsum sheathing placed vertically with 6d box nails 8" on center at joints and 12" on center elsewhere. An approved building paper is next applied, followed by 1" by No. 18 gage self-furred exterior lath attached with 8d by $2^{1}/_{2}$"-long galvanized roofing nails spaced 6" on center along each stud. Cement plaster consisting of a $^{1}/_{2}$" scratch coat, a bonding agent and a $^{1}/_{2}$" brown coat and a finish coat is then applied. The scratch coat is mixed in the proportion of 1:3 by weight, cement to sand with 10 pounds of hydrated lime and 3 pounds of approved additives or admixtures per sack of cement. The brown coat is mixed in the proportion of 1:4 by weight, cement to sand with the same amounts of hydrated lime and approved additives or admixtures used in the scratch coat. The interior is covered with $^{3}/_{8}$" gypsum lath with 1" hexagonal mesh of 0.035 inch (No. 20 B.W. gage) woven wire lath furred out $^{5}/_{16}$" and 1" perlite or vermiculite gypsum plaster. Lath nailed with $1^{1}/_{8}$" by No. 13 gage by $^{19}/_{64}$" head plasterboard glued nails spaced 5" on center. Mesh attached by $1^{3}/_{4}$" by No. 12 gage by $^{3}/_{8}$" head nails with $^{3}/_{8}$" furrings, spaced 8" on center. The plaster mix shall not exceed 100 pounds of gypsum to $2^{1}/_{2}$ cubic feet of aggregate.	—	—	$8^{3}/_{8}$	—
	15-1.8[l, m]	2" × 6" wood studs 16" on center. The exterior face has a layer of $^{5}/_{8}$" Type X gypsum sheathing placed vertically with 6d box nails 8" on center at joints and 12" on center elsewhere. An approved building paper is next applied, followed by $1^{1}/_{2}$" by No. 17 gage self-furred exterior lath attached with 8d by $2^{1}/_{2}$"-long galvanized roofing nails spaced 6" on center along each stud. Cement plaster consisting of a $^{1}/_{2}$" scratch coat and a $^{1}/_{2}$" brown coat is then applied. The plaster shall be permitted to be placed by machine. The scratch coat is mixed in the proportion of 1:4 by weight, plastic cement to sand. The brown coat is mixed in the proportion of 1:5 by weight, plastic cement to sand. The interior is covered with $^{3}/_{8}$" gypsum lath with 1" hexagonal mesh of No. 20-gage woven wire lath furred out $^{5}/_{16}$" and 1" perlite or vermiculite gypsum plaster. Lath nailed with $1^{1}/_{8}$" by No. 13 gage by $^{19}/_{64}$" head plasterboard glued nails spaced 5" on center. Mesh attached by $1^{3}/_{4}$" by No.12 gage by $^{3}/_{8}$" head nails with $^{3}/_{8}$" furrings, spaced 8" on center. The plaster mix shall not exceed 100 pounds of gypsum to $2^{1}/_{2}$ cubic feet of aggregate.	—	—	$8^{3}/_{8}$	—
	15-1.9	4" No. 18 gage, nonload-bearing metal studs, 16" on center, with 1" Portland cement lime plaster (measured from the back side of the $^{3}/_{4}$-pound expanded metal lath) on the exterior surface. Interior surface to be covered with 1" of gypsum plaster on $^{3}/_{4}$-pound expanded metal lath proportioned by weight—1:2 for scratch coat, 1:3 for brown, gypsum to sand. Lath on one side of the partition fastened to $^{1}/_{4}$" diameter pencil rods supported by No. 20 gage metal clips, located 16" on center vertically, on each stud. 3" thick mineral fiber insulating batts friction fitted between the studs.	—	—	$6^{1}/_{2}$[d]	—

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TABLE 721.1(2)—RATED FIRE-RESISTANCE PERIODS FOR VARIOUS WALLS AND PARTITIONS[a, o, p]—continued

MATERIAL	ITEM NUMBER	CONSTRUCTION	MINIMUM FINISHED THICKNESS FACE-TO-FACE[b] (inches)			
			4 hours	3 hours	2 hours	1 hour
15. Exterior or interior walls—continued	15-1.10	Steel studs 0.060" thick, 4" deep or 6" at 16" or 24" centers, with $^1/_2$" glass fiber-reinforced concrete (GFRC) on the exterior surface. GFRC is attached with flex anchors at 24" on center, with 5" leg welded to studs with two $^1/_2$"-long flare-bevel welds, and 4" foot attached to the GFRC skin with $^5/_8$"-thick GFRC bonding pads that extend $2^1/_2$" beyond the flex anchor foot on both sides. Interior surface to have two layers of $^1/_2$" Type X gypsum wallboard.[e] The first layer of wallboard to be attached with 1"-long Type S buglehead screws spaced 24" on center and the second layer is attached with 1 $^5/_8$"-long Type S screws spaced at 12" on center. Cavity is to be filled with 5" of 4 pcf (nominal) mineral fiber batts. GFRC has $1^1/_2$" returns packed with mineral fiber and caulked on the exterior.	—	—	$6^1/_2$	—
	15-1.11	Steel studs 0.060" thick, 4" deep or 6" at 16" or 24" centers, respectively, with $^1/_2$" glass fiber-reinforced concrete (GFRC) on the exterior surface. GFRC is attached with flex anchors at 24" on center, with 5" leg welded to studs with two $^1/_2$"-long flare-bevel welds, and 4" foot attached to the GFRC skin with $^5/_8$"-thick GFRC bonding pads that extend $2^1/_2$" beyond the flex anchor foot on both sides. Interior surface to have one layer of $^5/_8$" Type X gypsum wallboard[e], attached with $1^1/_4$"-long Type S buglehead screws spaced 12" on center. Cavity is to be filled with 5" of 4 pcf (nominal) mineral fiber batts. GFRC has $1^1/_2$" returns packed with mineral fiber and caulked on the exterior.	—	—	—	$6^1/_8$
	15-1.12[q]	2" × 6" wood studs at 16" with double top plates, single bottom plate; interior and exterior sides covered with $^5/_8$" Type X gypsum wallboard, 4′ wide, applied horizontally or vertically with vertical joints over studs, and fastened with $2^1/_4$" Type S drywall screws, spaced 12" on center. Cavity to be filled with $5^1/_2$" mineral wool insulation.	—	—	—	$6^3/_4$
	15-1.13[q]	2" × 6" wood studs at 16" with double top plates, single bottom plate; interior and exterior sides covered with $^5/_8$" Type X gypsum wallboard, 4′ wide, applied vertically with all joints over framing or blocking and fastened with $2^1/_4$" Type S drywall screws, spaced 12" on center. R-19 mineral fiber insulation installed in stud cavity.	—	—	—	$6^3/_4$
	15-1.14[q]	2" × 6" wood studs at 16" with double top plates, single bottom plate; interior and exterior sides covered with $^5/_8$" Type X gypsum wallboard, 4′ wide, applied horizontally or vertically with vertical joints over studs, and fastened with $2^1/_4$" Type S drywall screws, spaced 7" on center.	—	—	—	$6^3/_4$
	15-1.15[q]	2" × 4" wood studs at 16" with double top plates, single bottom plate; interior and exterior sides covered with $^5/_8$" Type X gypsum wallboard and sheathing, respectively, 4′ wide, applied horizontally or vertically with vertical joints over studs, and fastened with $2^1/_4$" Type S drywall screws, spaced 12" on center. Cavity to be filled with $3^1/_2$" mineral wool insulation.	—	—	—	$4^3/_4$
	15-1.16[q]	2" × 6" wood studs at 24" centers with double top plates, single bottom plate; interior and exterior side covered with two layers of $^5/_8$" Type X gypsum wallboard, 4′ wide, applied horizontally with vertical joints over studs. Base layer fastened with $2^1/_4$" Type S drywall screws, spaced 24" on center and face layer fastened with Type S drywall screws, spaced 8" on center, wallboard joints covered with paper tape and joint compound, fastener heads covered with joint compound. Cavity to be filled with $5^1/_2$" mineral wool insulation.	—	—	8	—

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TABLE 721.1(2)—RATED FIRE-RESISTANCE PERIODS FOR VARIOUS WALLS AND PARTITIONS[a, o, p]—continued						
MATERIAL	ITEM NUMBER	CONSTRUCTION	MINIMUM FINISHED THICKNESS FACE-TO-FACE[b] (inches)			
			4 hours	3 hours	2 hours	1 hour
15. Exterior or interior walls—continued	15-2.1[d]	$3^5/_8$" No. 16 gage steel studs at 24" on center or 2" × 4" wood studs at 24" on center. Metal lath attached to the exterior side of studs with minimum 1" long No. 6 drywall screws at 6" on center and covered with minimum $^3/_4$" thick Portland cement plaster. Thin veneer brick units of clay or shale complying with ASTM C1088, Grade TBS or better, installed in running bond in accordance with Section 1404.11. Combined total thickness of the Portland cement plaster, mortar and thin veneer brick units shall be not less than $1^3/_4$". Interior side covered with one layer of $^5/_8$"-thick Type X gypsum wallboard attached to studs with 1" long No. 6 drywall screws at 12" on center.	—	—	—	6
	15-2.2[d]	$3^5/_8$" No. 16 gage steel studs at 24" on center or 2" × 4" wood studs at 24" on center. Metal lath attached to the exterior side of studs with minimum 1" long No. 6 drywall screws at 6" on center and covered with minimum $^3/_4$" thick Portland cement plaster. Thin veneer brick units of clay or shale complying with ASTM C1088, Grade TBS or better, installed in running bond in accordance with Section 1404.11. Combined total thickness of the Portland cement plaster, mortar and thin veneer brick units shall be not less than 2". Interior side covered with two layers of $^5/_8$"-thick Type X gypsum wallboard. Bottom layer attached to studs with 1"-long No. 6 drywall screws at 24" on center. Top layer attached to studs with $1^5/_8$"-long No. 6 drywall screws at 12" on center.	—	—	$6^7/_8$	—
	15-2.3[d]	$3^5/_8$" No. 16 gage steel studs at 16" on center or 2" × 4" wood studs at 16" on center. Where metal lath is used, attach to the exterior side of studs with minimum 1"-long No. 6 drywall screws at 6" on center. Brick units of clay or shale not less than $2^5/_8$" thick complying with ASTM C216 installed in accordance with Section 1404.7 with a minimum 1" airspace. Interior side covered with one layer of $^5/_8$"-thick Type X gypsum wallboard attached to studs with 1"-long No. 6 drywall screws at 12" on center.	—	—	—	$7^7/_8$
	15-2.4[d]	$3^5/_8$" No. 16 gage steel studs at 16" on center or 2" × 4" wood studs at 16" on center. Where metal lath is used, attach to the exterior side of studs with minimum 1"-long No. 6 drywall screws at 6" on center. Brick units of clay or shale not less than $2^5/_8$" thick complying with ASTM C216 installed in accordance with Section 1404.7 with a minimum 1" airspace. Interior side covered with two layers of $^5/_8$"-thick Type X gypsum wallboard. Bottom layer attached to studs with 1"-long No. 6 drywall screws at 24" on center. Top layer attached to studs with 1 $^5/_8$"-long No. 6 drywall screws at 12" on center.	—	—	$8^1/_2$	—
16. Exterior walls rated for fire resistance from the inside only in accordance with Section 705.5.	16-1.1[q]	2" × 4" wood studs at 16" centers with double top plates, single bottom plate; interior side covered with $^5/_8$" Type X gypsum wallboard, 4' wide, applied horizontally unblocked, and fastened with $2^1/_4$" Type S drywall screws, spaced 12" on center, wallboard joints covered with paper tape and joint compound, fastener heads covered with joint compound. Exterior covered with $^3/_8$" wood structural panels, applied vertically, horizontal joints blocked and fastened with 6d common nails (bright)—12" on center in the field, and 6" on center panel edges. Cavity to be filled with $3^1/_2$" mineral wool insulation. Rating established for exposure from interior side only.	—	—	—	$4^1/_2$

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TABLE 721.1(2)—RATED FIRE-RESISTANCE PERIODS FOR VARIOUS WALLS AND PARTITIONS[a, o, p]—continued

MATERIAL	ITEM NUMBER	CONSTRUCTION	MINIMUM FINISHED THICKNESS FACE-TO-FACE[b] (inches)			
			4 hours	3 hours	2 hours	1 hour
16. Exterior walls rated for fire resistance from the inside only in accordance with Section 705.5.—continued	16-1.2[q]	2" × 6" wood studs at 16" centers with double top plates, single bottom plate; interior side covered with $^{5}/_{8}$" Type X gypsum wallboard, 4' wide, applied horizontally or vertically with vertical joints over studs and fastened with $2^{1}/_{4}$" Type S drywall screws, spaced 12" on center, wallboard joints covered with paper tape and joint compound, fastener heads covered with joint compound, exterior side covered with $^{7}/_{16}$" wood structural panels fastened with 6d common nails (bright) spaced 12" on center in the field and 6" on center along the panel edges. Cavity to be filled with $5^{1}/_{2}$" mineral wool insulation. Rating established from the gypsum-covered side only.	—	—	—	$6^{9}/_{16}$
	16-1.3[q]	2" × 6" wood studs at 16" centers with double top plates, single bottom plates; interior side covered with $^{5}/_{8}$" Type X gypsum wallboard, 4' wide, applied vertically with all joints over framing or blocking and fastened with $2^{1}/_{4}$" Type S drywall screws spaced 7" on center. Joints to be covered with tape and joint compound. Exterior covered with $^{3}/_{8}$" wood structural panels, applied vertically with edges over framing or blocking and fastened with 6d common nails (bright) at 12" on center in the field and 6" on center on panel edges. R-19 mineral fiber insulation installed in stud cavity. Rating established from the gypsum-covered side only.	—	—	—	$6^{1}/_{2}$
	16-1.4[q]	2" × 6" wood studs at 24" centers with double top plates, single bottom plates; interior side covered with $^{5}/_{8}$" Type X gypsum wallboard, 4' wide, applied vertically with all joints over framing or blocking and fastened with $2^{1}/_{4}$" Type S drywall screws spaced 7" on center. Joints covered with tape and joint compound. Exterior covered with $^{15}/_{32}$" wood structural panels, applied vertically with edges over framing or blocking and fastened with 6d common nails (bright) at 12" on center in the field and 6" on center on panel edges. R-19 fiberglass insulation installed in stud cavity. Rating established from the gypsum-covered side only.	—	—	—	$6^{19}/_{32}$

For SI: 1 inch = 25.4 mm, 1 square inch = 645.2 mm^2, 1 cubic foot = 0.0283 m^3.

a. Staples with equivalent holding power and penetration shall be permitted to be used as alternate fasteners to nails for attachment to wood framing.

b. Thickness shown for brick and clay tile is nominal thicknesses unless plastered, in which case thicknesses are net. Thickness shown for concrete masonry and clay masonry is equivalent thickness defined in Section 722.3.1 for concrete masonry and Section 722.4.1.1 for clay masonry. Where all cells are solid grouted or filled with silicone-treated perlite loose-fill insulation; vermiculite loose-fill insulation; or expanded clay, shale or slate lightweight aggregate, the equivalent thickness shall be the thickness of the block or brick using specified dimensions as defined in Chapter 21. Equivalent thickness shall include the thickness of applied plaster and lath or gypsum wallboard, where specified.

c. For units in which the net cross-sectional area of cored brick in any plane parallel to the surface containing the cores is not less than 75 percent of the gross cross-sectional area measured in the same plane.

d. Shall be used for nonbearing purposes only.

e. For all of the construction with gypsum wallboard described in this table, gypsum base for veneer plaster of the same size, thickness and core type shall be permitted to be substituted for gypsum wallboard, provided that attachment is identical to that specified for the wallboard, and the joints on the face layer are reinforced and the entire surface is covered with not less than $^{1}/_{16}$-inch gypsum veneer plaster.

f. The fire-resistance time period for concrete masonry units meeting the equivalent thicknesses required for a 2-hour fire-resistance rating in Item 3, and having a thickness of not less than $7\ ^{5}/_{8}$ inches is 4 hours where cores that are not grouted are filled with silicone-treated perlite loose-fill insulation; vermiculite loose-fill insulation; or expanded clay, shale or slate lightweight aggregate, sand or slag having a maximum particle size of $^{3}/_{8}$ inch.

g. The fire-resistance rating of concrete masonry units composed of a combination of aggregate types or where plaster is applied directly to the concrete masonry shall be determined in accordance with ACI 216.1/TMS 216. Lightweight aggregates shall have a maximum combined density of 65 pounds per cubic foot.

h. See Note b. The equivalent thickness shall be permitted to include the thickness of cement plaster or 1.5 times the thickness of gypsum plaster applied in accordance with the requirements of Chapter 25.

i. Concrete walls shall be reinforced with horizontal and vertical temperature reinforcement as required by Chapter 19.

j. Studs are welded truss wire studs with 0.18 inch (No. 7 B.W. gage) flange wire and 0.18 inch (No. 7 B.W. gage) truss wires.

k. Nailable metal studs consist of two channel studs spot welded back to back with a crimped web forming a nailing groove.

l. Wood structural panels shall be permitted to be installed between the fire protection and the wood studs on either the interior or exterior side of the wood frame assemblies in this table, provided that the length of the fasteners used to attach the fire protection is increased by an amount not less than the thickness of the wood structural panel.

m. For studs with a slenderness ratio, l_e/d, greater than 33, the design stress shall be reduced to 78 percent of allowable F'_c. For studs with a slenderness ratio, l_e/d, not exceeding 33, the design stress shall be reduced to 78 percent of the adjusted stress F'_c calculated for studs having a slenderness ratio l_e/d of 33.

n. For properties of cooler or wallboard nails, see ASTM C514, ASTM C547 or ASTM F1667.

o. Generic fire-resistance ratings (those not designated as PROPRIETARY* in the listing) in the GA-600 shall be accepted as if herein specified.

p. NCMA TEK 5-8A shall be permitted for the design of fire walls.

q. The studs in this assembly can be designed without fire-related capacity reductions.

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TABLE 721.1(3)—MINIMUM PROTECTION FOR FLOOR AND ROOF SYSTEMS [a, q]

FLOOR OR ROOF CONSTRUCTION	ITEM NUMBER	CEILING CONSTRUCTION	THICKNESS OF FLOOR OR ROOF SLAB (inches)				MINIMUM THICKNESS OF CEILING (inches)			
			4 hours	3 hours	2 hours	1 hour	4 hours	3 hours	2 hours	1 hour
1. Siliceous aggregate concrete	1-1.1	Slab (ceiling not required). Minimum cover over nonprestressed reinforcement shall be not less than $^3/_4$". [b]	7.0	6.2	5.0	3.5	—	—	—	—
2. Carbonate aggregate concrete	2-1.1		6.6	5.7	4.6	3.2	—	—	—	—
3. Sand-lightweight concrete	3-1.1		5.4	4.6	3.8	2.7	—	—	—	—
4. Lightweight concrete	4-1.1		5.1	4.4	3.6	2.5	—	—	—	—
5. Reinforced concrete	5-1.1	Slab with suspended ceiling of vermiculite gypsum plaster over metal lath attached to $^3/_4$" cold-rolled channels spaced 12" on center. Ceiling located 6" minimum below joists.	3	2	—	—	1	$^3/_4$	—	—
	5-2.1	$^5/_8$" Type X gypsum wallboard [c] attached to 0.018 inch (No.25 carbon sheet steel gage) by $^7/_8$" deep by $2^5/_8$" hat-shaped galvanized steel channels with 1"-long No. 6 screws. The channels are spaced 24" on center, span 35" and are supported along their length at 35" intervals by 0.033" (No. 21 galvanized sheet gage) galvanized steel flat strap hangers having formed edges that engage the lips of the channel. The strap hangers are attached to the side of the concrete joists with $^5/_{32}$" by $1^1/_4$"-long power-driven fasteners. The wallboard is installed with the long dimension perpendicular to the channels. End joints occur on channels and supplementary channels are installed parallel to the main channels, 12" each side, at end joint occurrences. The finished ceiling is located approximately 12" below the soffit of the floor slab.	—	—	$2^1/_2$	—	—	—	$^5/_8$	—
6. Steel joists constructed with a poured reinforced concrete slab on metal lath forms or steel form units. [d, e]	6-1.1	Gypsum plaster on metal lath attached to the bottom cord with single No. 16 gage or doubled No. 18 gage wire ties spaced 6" on center. Plaster mixed 1:2 for scratch coat, 1:3 for brown coat, by weight, gypsum-to-sand aggregate for 2-hour system. For 3-hour system plaster is neat.	—	—	$2^1/_2$	$2^1/_4$	—	—	$^3/_4$	$^5/_8$
	6-2.1	Vermiculite gypsum plaster on metal lath attached to the bottom chord with single No. 16 gage or doubled 0.049-inch (No. 18 B.W. gage) wire ties 6" on center.	—	2	—	—	—	$^5/_8$	—	—
	6-3.1	Cement plaster over metal lath attached to the bottom chord of joists with single No. 16 gage or doubled 0.049" (No. 18 B.W. gage) wire ties spaced 6" on center. Plaster mixed 1:2 for scratch coat, 1:3 for brown coat for 1-hour system and 1:1 for scratch coat, $1:1^1/_2$ for brown coat for 2-hour system, by weight, cement to sand.	—	—	—	2	—	—	—	$^5/_8$ [f]

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TABLE 721.1(3)—MINIMUM PROTECTION FOR FLOOR AND ROOF SYSTEMS [a, q]—continued

FLOOR OR ROOF CONSTRUCTION	ITEM NUMBER	CEILING CONSTRUCTION	THICKNESS OF FLOOR OR ROOF SLAB (inches)				MINIMUM THICKNESS OF CEILING (inches)			
			4 hours	3 hours	2 hours	1 hour	4 hours	3 hours	2 hours	1 hour
6. Steel joists constructed with a poured reinforced concrete slab on metal lath forms or steel form units.[d, e] —continued	6-4.1	Ceiling of $^5/_8$" Type X wallboard[c] attached to $^7/_8$" deep by $2^5/_8$" by 0.021 inch (No. 25 carbon sheet steel gage) hat-shaped furring channels 12" on center with 1"-long No. 6 wallboard screws at 8" on center. Channels wire tied to bottom chord of joists with doubled 0.049 inch (No. 18 B.W. gage) wire or suspended below joists on wire hangers.[g]	—	—	$2^1/_2$	—	—	—	$^5/_8$	—
	6-5.1	Wood-fibered gypsum plaster mixed 1:1 by weight gypsum to sand aggregate applied over metal lath. Lath tied 6" on center to $^3/_4$" channels spaced $13^1/_2$" on center. Channels secured to joists at each intersection with two strands of 0.049 inch (No. 18 B.W. gage) galvanized wire.	—	—	$2^1/_2$	—	—	—	$^3/_4$	—
7. Reinforced concrete slabs and joists with hollow clay tile fillers laid end to end in rows $2^1/_2$" or more apart; reinforcement placed between rows and concrete cast around and over tile.	7-1.1	$^5/_8$" gypsum plaster on bottom of floor or roof construction.	—	—	8[h]	—	—	—	$^5/_8$	—
	7-1.2	None	—	—	—	$5^1/_2$[i]	—	—	—	—
8. Steel joists constructed with a reinforced concrete slab on top poured on a $^1/_2$"-deep steel deck.[e]	8-1.1	Vermiculite gypsum plaster on metal lath attached to $^3/_4$" cold-rolled channels with 0.049" (No. 18 B.W. gage) wire ties spaced 6" on center.	$2^1/_2$[j]	—	—	—	$^3/_4$	—	—	—
9. 3"-deep cellular steel deck with concrete slab on top. Slab thickness measured to top.	9-1.1	Suspended ceiling of vermiculite gypsum plaster base coat and vermiculite acoustical plaster on metal lath attached at 6" intervals to $^3/_4$" cold-rolled channels spaced 12" on center and secured to $1^1/_2$" cold-rolled channels spaced 36" on center with 0.065" (No. 16 B.W. gage) wire. $1^1/_2$" channels supported by No. 8 gage wire hangers at 36" on center. Beams within envelope and with a $2^1/_2$" airspace between beam soffit and lath have a 4-hour rating.	$2^1/_2$	—	—	—	$1^1/_8$[k]	—	—	—
10. $1^1/_2$"-deep steel roof deck on steel framing. Insulation board, 30 pcf density, composed of wood fibers with cement binders of thickness shown bonded to deck with unified asphalt adhesive. Covered with a Class A or B roof covering.	10-1.1	Ceiling of gypsum plaster on metal lath. Lath attached to $^3/_4$" furring channels with 0.049" (No. 18 B.W. gage) wire ties spaced 6" on center. $^3/_4$" channel saddle tied to 2" channels with doubled 0.065" (No. 16 B.W. gage) wire ties. 2"channels spaced 36" on center suspended 2" below steel framing and saddle tied with 0.165" (No. 8 B.W. gage) wire. Plaster mixed 1:2 by weight, gypsum-to-sand aggregate.	—	—	$1^7/_8$	1	—	—	$^3/_4$[1]	$^3/_4$[1]

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TABLE 721.1(3)—MINIMUM PROTECTION FOR FLOOR AND ROOF SYSTEMS [a, q]—continued										
FLOOR OR ROOF CONSTRUCTION	ITEM NUMBER	CEILING CONSTRUCTION	THICKNESS OF FLOOR OR ROOF SLAB (inches)				MINIMUM THICKNESS OF CEILING (inches)			
			4 hours	3 hours	2 hours	1 hour	4 hours	3 hours	2 hours	1 hour
11. $1^1/_2$"-deep steel roof deck on steel-framing wood fiber insulation board, 17.5 pcf density on top applied over a 15-lb asphalt-saturated felt. Class A or B roof covering.	11-1.1	Ceiling of gypsum plaster on metal lath. Lath attached to $^3/_4$" furring channels with 0.049" (No. 18 B.W. gage) wire ties spaced 6" on center. $^3/_4$" channels saddle tied to 2" channels with doubled 0.065" (No. 16 B.W. gage) wire ties. 2" channels spaced 36" on center suspended 2" below steel framing and saddle tied with 0.165" (No. 8 B.W. gage) wire. Plaster mixed 1:2 for scratch coat and 1:3 for brown coat, by weight, gypsum-to-sand aggregate for 1-hour system. For 2-hour system, plaster mix is 1:2 by weight, gypsum-to-sand aggregate.	—	—	$1^1/_2$	1	—	—	$^7/_8$ [g]	$^3/_4$ [1]
12. $1^1/_2$" deep steel roof deck on steel-framing insulation of rigid board consisting of expanded perlite and fibers impregnated with integral asphalt waterproofing; density 9 to 12 pcf secured to metal roof deck by $^1/_2$"-wide ribbons of waterproof, cold-process liquid adhesive spaced 6" apart. Steel joist or light steel construction with metal roof deck, insulation, and Class A or B built-up roof covering.[e]	12-1.1	Gypsum-vermiculite plaster on metal lath wire tied at 6" intervals to $^3/_4$" furring channels spaced 12" on center and wire tied to 2" runner channels spaced 32" on center. Runners wire tied to bottom chord of steel joists.	—	—	1	—	—	—	$^7/_8$	—
13. Double wood floor over wood joists spaced 16" on center.[m, n]	13-1.1	Gypsum plaster over $^3/_8$" Type X gypsum lath. Lath initially applied with not less than four $1^1/_8$" by No. 13 gage by $^{19}/_{64}$" head plasterboard blued nails per bearing. Continuous stripping over lath along all joist lines. Stripping consists of 3"-wide strips of metal lath attached by $1^1/_2$" by No. 11 gage by $^1/_2$" head roofing nails spaced 6" on center. Alternate stripping consists of 3"-wide 0.049" diameter wire stripping weighing 1 pound per square yard and attached by No. 16 gage by $1^1/_2$" by $^3/_4$" crown width staples, spaced 4" on center. Where alternate stripping is used, the lath nailing shall consist of two nails at each end and one nail at each intermediate bearing. Plaster mixed 1:2 by weight, gypsum-to-sand aggregate.	—	—	—	—	—	—	—	$^7/_8$
	13-1.2	Cement or gypsum plaster on metal lath. Lath fastened with $1^1/_2$" by No. 11 gage by $^7/_{16}$" head barbed shank roofing nails spaced 5" on center. Plaster mixed 1:2 for scratch coat and 1:3 for brown coat, by weight, cement to sand aggregate.	—	—	—	—	—	—	—	$^5/_8$
	13-1.3	Perlite or vermiculite gypsum plaster on metal lath secured to joists with $1^1/_2$" by No. 11 gage by $^7/_{16}$" head barbed shank roofing nails spaced 5" on center.	—	—	—	—	—	—	—	$^5/_8$

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TABLE 721.1(3)—MINIMUM PROTECTION FOR FLOOR AND ROOF SYSTEMS [a, q]—continued										
FLOOR OR ROOF CONSTRUCTION	ITEM NUMBER	CEILING CONSTRUCTION	THICKNESS OF FLOOR OR ROOF SLAB (inches)				MINIMUM THICKNESS OF CEILING (inches)			
			4 hours	3 hours	2 hours	1 hour	4 hours	3 hours	2 hours	1 hour
13. Double wood floor over wood joists spaced 16" on center.[m, n]—continued	13-1.4	$^1/_2$" Type X gypsum wallboard[c] nailed to joists with 5d cooler[o] or wallboard[o] nails at 6" on center. End joints of wallboard centered on joists.	—	—	—	—	—	—	—	$^1/_2$
14. Plywood stressed skin panels consisting of $^5/_8$"-thick interior C-D (exterior glue) top stressed skin on 2" × 6" nominal (minimum) stringers. Adjacent panel edges joined with 8d common wire nails spaced 6" on center. Stringers spaced 12" maximum on center.	14-1.1	$^1/_2$"-thick wood fiberboard weighing 15 to 18 pounds per cubic foot installed with long dimension parallel to stringers or $^3/_8$" C-D (exterior glue) plywood glued and/or nailed to stringers. Nailing to be with 5d cooler[o] or wallboard[o] nails at 12" on center. Second layer of $^1/_2$" Type X gypsum wallboard[c] applied with long dimension perpendicular to joists and attached with 8d cooler[o] or wallboard[o] nails at 6" on center at end joints and 8" on center elsewhere. Wallboard joints staggered with respect to fiberboard joints.	—	—	—	—	—	—	—	1
15. Vermiculite concrete slab proportioned 1:4 (Portland cement to vermiculite aggregate) on a $1^1/_2$"-deep steel deck supported on individually protected steel framing. Maximum span of deck 6′-10" where deck is less than 0.019 inch (No. 26 carbon steel sheet gage) or greater. Slab reinforced with 4" × 8" 0.109/0.083" (No. $^{12}/_{14}$ B.W. gage) welded wire mesh.	15-1.1	None	—	—	—	3[j]	—	—	—	—
16. Perlite concrete slab proportioned 1:6 (Portland cement to perlite aggregate) on a $1^1/_4$"-deep steel deck supported on individually protected steel framing. Slab reinforced with 4" × 8" 0.109/0.083" (No.$^{12}/_{14}$ B.W. gage) welded wire mesh.	16-1.1	None	—	—	—	$3^1/_2$[j]	—	—	—	—
17. Perlite concrete slab proportioned 1:6 (Portland cement to perlite aggregate) on a $^9/_{16}$"-deep steel deck supported by steel joists 4′ on center. Class A or B roof covering on top.	17-1.1	Perlite gypsum plaster on metal lath wire tied to $^3/_4$" furring channels attached with 0.065" (No. 16 B.W. gage) wire ties to lower chord of joists.	—	2[p]	2[p]	—	—	$^7/_8$	$^3/_4$	—
18. Perlite concrete slab proportioned 1:6 (Portland cement to perlite aggregate) on $1^1/_4$"-deep steel deck supported on individually protected steel framing. Maximum span of deck 6′-10" where deck is less than 0.019" (No. 26 carbon sheet steel gage) and 8′-0" where deck is 0.019" (No. 26 carbon sheet steel gage) or greater. Slab reinforced with 0.042" (No. 19 B.W. gage) hexagonal wire mesh. Class A or B roof covering on top.	18-1.1	None	—	$2^1/_4$[p]	$2^1/_4$[p]	—	—	—	—	—

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TABLE 721.1(3)—MINIMUM PROTECTION FOR FLOOR AND ROOF SYSTEMS [a, q]—continued

FLOOR OR ROOF CONSTRUCTION	ITEM NUMBER	CEILING CONSTRUCTION	THICKNESS OF FLOOR OR ROOF SLAB (inches)				MINIMUM THICKNESS OF CEILING (inches)			
			4 hours	3 hours	2 hours	1 hour	4 hours	3 hours	2 hours	1 hour
19. Floor and beam construction consisting of 3"-deep cellular steel floor unit mounted on steel members with 1:4 (proportion of Portland cement to perlite aggregate) perlite-concrete floor slab on top.	19-1.1	Suspended envelope ceiling of perlite gypsum plaster on metal lath attached to $^{3}/_{4}$" cold-rolled channels, secured to $1^{1}/_{2}$" cold-rolled channels spaced 42" on center supported by 0.203 inch (No. 6 B.W. gage) wire 36" on center. Beams in envelope with 3" minimum airspace between beam soffit and lath have a 4-hour rating.	2[p]	—	—	—	1[l]	—	—	—
20. Perlite concrete proportioned 1:6 (Portland cement to perlite aggregate) poured to $^{1}/_{8}$" thickness above top of corrugations of $1^{5}/_{16}$"-deep galvanized steel deck maximum span 8′-0" for 0.024" (No. 24 galvanized sheet gage) or 6′-0" for 0.019" (No. 26 galvanized sheet gage) with deck supported by individually protected steel framing. Approved polystyrene foam plastic insulation board having a flame spread not exceeding 75 (1" to 4" thickness) with vent holes that approximate 3 percent of the board surface area placed on top of perlite slurry. A 2′ by 4′ insulation board contains six $2^{3}/_{4}$" diameter holes. Board covered with $2^{1}/_{4}$" minimum perlite concrete slab. Slab reinforced with mesh consisting of 0.042" (No.19 B.W. gage) galvanized steel wire twisted together to form 2" hexagons with straight 0.065" (No. 16 B.W. gage) galvanized steel wire woven into mesh and spaced 3". Alternate slab reinforcement shall be permitted to consist of 4" × 8", 0.109/0.238" (No. 12/4 B.W. gage), or 2" × 2", 0.083/0.083" (No. 14/14 B.W. gage) welded wire fabric. Class A or B roof covering on top.	20-1.1	None	—	—	Varies	—	—	—	—	—
21. Wood joists, wood I-joists, floor trusses and flat or pitched roof trusses spaced a maximum 24" o.c. with $^{1}/_{2}$" wood structural panels with exterior glue applied at right angles to top of joist or top chord of trusses with 8 d nails. The wood structural panel thickness shall be not less than nominal $^{1}/_{2}$" nor less than required by Chapter 23.	21-1.1	Base layer $^{5}/_{8}$" Type X gypsum wallboard applied at right angles to joist or truss 24" o.c. with $1^{1}/_{4}$" Type S or Type W drywall screws 24" o.c. Face layer $^{5}/_{8}$" Type X gypsum wallboard or veneer base applied at right angles to joist or truss through base layer with $1^{7}/_{8}$" Type S or Type W drywall screws 12" o.c. at joints and intermediate joist or truss. Face layer Type G drywall screws placed 2" back on either side of face layer end joints, 12" o.c.	—	—	—	Varies	—	—	—	$1^{1}/_{4}$

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TABLE 721.1(3)—MINIMUM PROTECTION FOR FLOOR AND ROOF SYSTEMS [a, q]—continued

FLOOR OR ROOF CONSTRUCTION	ITEM NUMBER	CEILING CONSTRUCTION	THICKNESS OF FLOOR OR ROOF SLAB (inches)				MINIMUM THICKNESS OF CEILING (inches)			
			4 hours	3 hours	2 hours	1 hour	4 hours	3 hours	2 hours	1 hour
22. Steel joists, floor trusses and flat or pitched roof trusses spaced a maximum 24" o.c. with $^1/_2$" wood structural panels with exterior glue applied at right angles to top of joist or top chord of trusses with No. 8 screws. The wood structural panel thickness shall be not less than nominal $^1/_2$" nor less than required by Chapter 23.	22-1.1	Base layer $^5/_8$" Type X gypsum board applied at right angles to steel framing 24" on center with 1" Type S dry wall screws spaced 24" on center. Face layer $^5/_8$" Type X gypsum board applied at right angles to steel framing attached through base layer with $1^5/_8$" Type S dry wall screws 12" on center at end joints and intermediate joints and $1^1/_2$" Type G dry wall screws 12 inches on center placed 2" back on either side of face layer end joints. Joints of the face layer are offset 24" from the joints of the base layer.	—	—	—	Varies	—	—	—	$1^1/_4$
23. Wood I-joist (minimum joist depth $9^1/_4$" with a minimum flange depth of $1^5/_{16}$" and a minimum flange cross-sectional area of 2.25 square inches) at 24" o.c. spacing with a minimum 1 × 4 ($^3/_4$" × 3.5"actual) ledger strip applied parallel to and covering the bottom of the bottom flange of each member, tacked in place. 2" mineral wool insulation, 3.5 pcf (nominal) installed adjacent to the bottom flange of the I-joist and supported by the 1 × 4 ledger strip.	23-1.1	$^1/_2$"-deep single-leg resilient channel 16" on center (channels doubled at wallboard end joints), placed perpendicular to the furring strip and joist and attached to each joist by $1^7/_8$" Type S drywall screws. $^5/_8$" Type C gypsum wallboard applied perpendicular to the channel with end joints staggered not less than 4′ and fastened with $1^1/_8$" Type S drywall screws spaced 7" on center. Wallboard joints to be taped and covered with joint compound.	—	—	—	Varies	—	—	—	$^5/_8$
24. Wood I-joist (minimum I-joist depth $9^1/_4$" with a minimum flange depth of $1^1/_2$" and a minimum flange cross-sectional area of 5.25 square inches; minimum web thickness of $^3/_8$") @ 24" o.c., $1^1/_2$" mineral wool insulation (2.5 pcf-nominal) resting on hat-shaped furring channels.	24-1.1	Minimum 0.026" thick hat-shaped channel 16" o.c. (channels doubled at wallboard end joints), placed perpendicular to the joist and attached to each joist by $1^1/_4$" Type S drywall screws. $^5/_8$" Type C gypsum wallboard applied perpendicular to the channel with end joints staggered and fastened with $1^1/_8$" Type S drywall screws spaced 12" o.c. in the field and 8" o.c. at the wallboard ends. Wallboard joints to be taped and covered with joint compound.	—	—	—	Varies	—	—	—	$^5/_8$
25. Wood I-joist (minimum I-joist depth $9^1/_4$" with a minimum flange depth of $1^1/_2$" and a minimum flange cross-sectional area of 5.25 square inches; minimum web thickness of $^7/_{16}$") @ 24" o.c., $1^1/_2$" mineral wool insulation (2.5 pcf-nominal) resting on resilient channels.	25-1.1	Minimum 0.019"-thick resilient channel 16" o.c. (channels doubled at wallboard end joints), placed perpendicular to the joist and attached to each joist by $1^5/_8$" Type S drywall screws. $^5/_8$" Type C gypsum wallboard applied perpendicular to the channel with end joints staggered and fastened with 1" Type S drywall screws spaced 12" o.c. in the field and 8" o.c. at the wallboard ends. Wallboard joints to be taped and covered with joint compound.	—	—	—	Varies	—	—	—	$^5/_8$

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TABLE 721.1(3)—MINIMUM PROTECTION FOR FLOOR AND ROOF SYSTEMS [a, q]—continued

FLOOR OR ROOF CONSTRUCTION	ITEM NUMBER	CEILING CONSTRUCTION	THICKNESS OF FLOOR OR ROOF SLAB (inches)				MINIMUM THICKNESS OF CEILING (inches)			
			4 hours	3 hours	2 hours	1 hour	4 hours	3 hours	2 hours	1 hour
26. Wood I-joist (minimum I-joist depth $9^1/_4$" with a minimum flange thickness of $1^1/_2$" and a minimum flange cross-sectional area of 2.25 square inches; minimum web thick-ness of $^3/_8$") @ 24" o.c.	26-1.1	Two layers of $^1/_2$" Type X gypsum wallboard applied with the long dimension perpendicular to the I-joists with end joints staggered. The base layer is fastened with $1^5/_8$" Type S dry wall screws spaced 12" o.c. and the face layer is fastened with 2" Type S drywall screws spaced 12" o.c. in the field and 8" o.c. on the edges. Face layer end joints shall not occur on the same I-joist as base layer end joints and edge joints shall be offset 24"from base layer joints. Face layer to also be attached to base layer with $1^1/_2$" Type G drywall screws spaced 8" o.c. placed 6" from face layer end joints. Face layer wallboard joints to be taped and covered with joint compound.	—	—	—	Varies	—	—	—	1
27. Wood I-joist (minimum I-joist depth $9^1/_2$" with a minimum flange depth of $1^5/_{16}$" and a minimum flange cross-sectional area of 1.95 square inches; minimum web thickness of $^3/_8$") @ 24" o.c.	27-1.1	Minimum 0.019" thick resilient channel 16" o.c. (channels doubled at wallboard end joints), placed perpendicular to the joist and attached to each joist by $1^1/_4$" Type S drywall screws. Two layers of $^1/_2$" Type X gypsum wallboard applied with the long dimension perpendicular to the resilient channels with end joints staggered. The base layer is fastened with $1^1/_4$" Type S drywall screws spaced 12" o.c. and the face layer is fastened with $1^5/_8$" Type S drywall screws spaced 12" o.c. Face layer end joints shall not occur on the same I-joist as base layer end joints and edge joints shall be offset 24" from base layer joints. Face layer to also be attached to base layer with $1^1/_2$" Type G drywall screws spaced 8" o.c. placed 6" from face layer end joints. Face layer wallboard joints to be taped and covered with joint compound.	—	—	—	Varies	—	—	—	1
28. Wood I-joist (minimum I-joist depth $9^1/_4$" with a minimum flange depth of $1^1/_2$" and a minimum flange cross-sectional area of 2.25 square inches; minimum web thickness of $^3/_8$") @ 24" o.c. Unfaced fiberglass insulation or mineral wool insulation is installed between the I-joists supported on the upper surface of the flange by stay wires spaced 12" o.c.	28-1.1	Base layer of $^5/_8$" Type C gypsum wallboard attached directly to I-joists with $1^5/_8$" Type S drywall screws spaced 12" o.c. with ends staggered. Minimum 0.0179"-thick hat-shaped $^7/_8$-inch furring channel 16" o.c. (channels doubled at wallboard end joints), placed perpendicular to the joist and attached to each joist by $1^5/_8$" Type S drywall screws after the base layer of gypsum wallboard has been applied. The middle and face layers of $^5/_8$" Type C gypsum wallboard applied perpendicular to the channel with end joints staggered. The middle layer is fastened with 1" Type S drywall screws spaced 12" o.c. The face layer is applied parallel to the middle layer but with the edge joints offset 24" from those of the middle layer and fastened with $1^5/_8$" Type S drywall screws 8" o.c. The joints shall be taped and covered with joint compound.	—	—	—	Varies	—	—	$2^3/_4$	—

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TABLE 721.1(3)—MINIMUM PROTECTION FOR FLOOR AND ROOF SYSTEMS [a, q]—continued

FLOOR OR ROOF CONSTRUCTION	ITEM NUMBER	CEILING CONSTRUCTION	THICKNESS OF FLOOR OR ROOF SLAB (inches)				MINIMUM THICKNESS OF CEILING (inches)			
			4 hours	3 hours	2 hours	1 hour	4 hours	3 hours	2 hours	1 hour
29. Channel-shaped 18 gage steel joists (minimum depth 8") spaced a maximum 24" o.c. supporting tongue-and-groove wood structural panels (nominal minimum $^3/_4$"-thick) applied perpendicular to framing members. Structural panels attached with $1^5/_8$" Type S-12 screws spaced 12" o.c.	29-1.1	Base layer $^5/_8$" Type X gypsum board applied perpendicular to bottom of framing members with $1^1/_8$" Type S-12 screws spaced 12" o.c. Second layer $^5/_8$" Type X gypsum board attached perpendicular to framing members with $1^5/_8$" Type S-12 screws spaced 12" o.c. Second layer joints offset 24" from base layer. Third layer $^5/_8$" Type X gypsum board attached perpendicular to framing members with $2^3/_8$" Type S-12 screws spaced 12" o.c. Third layer joints offset 12" from second layer joints. Hat-shaped $^7/_8$-inch rigid furring channels applied at right angles to framing members over third layer with two $2^3/_8$" Type S-12 screws at each framing member. Face layer $^5/_8$" Type X gypsum board applied at right angles to furring channels with $1^1/_8$" Type S screws spaced 12" o.c.	—	—	Varies	—	—	—	$3^3/_8$	—
30. Wood I-joist (minimum I-joist depth $9^1/_2$" with a minimum flange depth of $1^1/_2$" and a minimum flange cross-sectional area of 2.25 square inches; minimum web thickness of $^3/_8$") @ 24" o.c. Fiberglass insulation placed between I-joists supported by the resilient channels.	30-1.1	Minimum 0.019"-thick resilient channel 16" o.c. (channels doubled at wallboard end joints), placed perpendicular to the joists and attached to each joist by $1^1/_4$" Type S dry wall screws. Two layers of $^1/_2$" Type X gypsum wallboard applied with the long dimension perpendicular to the resilient channels with end joints staggered. The base layer is fastened with $1^1/_4$" Type S drywall screws spaced 12" o.c. and the face layer is fastened with $1^5/_8$" Type S drywall screws spaced 12" o.c. Face layer end joints shall not occur on the same I-joist as base layer end joints and edge joints shall be offset 24" from base layer joints. Face layer to be attached to base layer with $1^1/_2$" Type G drywall screws spaced 8" o.c. placed 6" from face layer end joints. Face layer wallboard joints to be taped and covered with joint compound.	—	—	—	Varies	—	—	—	1

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TABLE 721.1(3)—MINIMUM PROTECTION FOR FLOOR AND ROOF SYSTEMS [a, q]—continued

FLOOR OR ROOF CONSTRUCTION	ITEM NUMBER	CEILING CONSTRUCTION	THICKNESS OF FLOOR OR ROOF SLAB (inches)				MINIMUM THICKNESS OF CEILING (inches)			
			4 hours	3 hours	2 hours	1 hour	4 hours	3 hours	2 hours	1 hour
31. Wood I-joist (minimum I-joist depth $9^1/_4$" with a minimum flange thickness of $1^1/_2$" and a minimum flange cross sectional area of 2.25 square inches; minimum web thickness of $^3/_8$") @ 24" o.c.	31- 1.1	Two layers of $^1/_2$" Type C gypsum wallboard applied with the long dimension perpendicular to the I-joists with end joints staggered. The base layer is fastened with 1" Type S drywall screws spaced 12" o.c. and the face layer is fastened with $1^5/_8$" Type S drywall screws spaced 12" o.c. in the field and 8" o.c. on the edges. Face layer edge joints shall not occur on the same I-joist as base layer end joints and edge joints shall be offset 24" from base layer joints. End joints centered on bottom flange of I-joists and offset a minimum of 48" from those of base layer. Face layer to also be attached to base layer with $1^1/_2$" Type G drywall screws spaced 8" o.c. with a 4" stagger, placed 6" from face layer end joints. Face layer wallboard joints taped and covered with joint compound. Screw heads covered with joint compound.	—	—	Varies	—	—	—	—	—

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound = 0.454 kg, 1 cubic foot = 0.0283 m^3, 1 pound per square inch = 6.895 kPa, 1 pound per linear foot = 1.4882 kg/m.

a. Staples with equivalent holding power and penetration shall be permitted to be used as alternate fasteners to nails for attachment to wood framing.

b. Where the slab is in an unrestrained condition, minimum reinforcement cover shall be not less than $1^5/_8$ inches for 4 hours (siliceous aggregate only); $1^1/_4$ inches for 4 and 3 hours; 1 inch for 2 hours (siliceous aggregate only); and $^3/_4$ inch for all other restrained and unrestrained conditions.

c. For all of the construction with gypsum wallboard described in this table, gypsum base for veneer plaster of the same size, thickness and core type shall be permitted to be substituted for gypsum wallboard, provided that attachment is identical to that specified for the wallboard, and the joints on the face layer are reinforced and the entire surface is covered with not less than $^1/_{16}$-inch gypsum veneer plaster.

d. Slab thickness over steel joists measured at the joists for metal lath form and at the top of the form for steel form units.

e.

(a) The maximum allowable stress level for H-Series joists shall not exceed 22,000 psi.

(b) The allowable stress for K-Series joists shall not exceed 26,000 psi, the nominal depth of such joist shall be not less than 10 inches and the nominal joist weight shall be not less than 5 pounds per linear foot.

f. Cement plaster with 15 pounds of hydrated lime and 3 pounds of approved additives or admixtures per bag of cement.

g. Gypsum wallboard ceilings attached to steel framing shall be permitted to be suspended with $1^1/_2$-inch cold-formed carrying channels spaced 48 inches on center, that are suspended with No. 8 SWG galvanized wire hangers spaced 48 inches on center. Cross-furring channels are tied to the carrying channels with No. 18 SWG galvanized wire hangers spaced 48 inches on center. Cross-furring channels are tied to the carrying channels with No. 18 SWG galvanized wire (double strand) and spaced as required for direct attachment to the framing. This alternative is applicable to those steel framing assemblies recognized under Note q.

h. Six-inch hollow clay tile with 2-inch concrete slab above.

i. Four-inch hollow clay tile with $1^1/_2$-inch concrete slab above.

j. Thickness measured to bottom of steel form units.

k. Five-eighths inch of vermiculite gypsum plaster plus $^1/_2$ inch of approved vermiculite acoustical plastic.

l. Furring channels spaced 12 inches on center.

m. Double wood floor shall be permitted to be either of the following:

(a) Subfloor of 1-inch nominal boarding, a layer of asbestos paper weighing not less than 14 pounds per 100 square feet and a layer of 1-inch nominal tongue-and-groove finished flooring.

(b) Subfloor of 1-inch nominal tongue-and-groove boarding or $^{15}/_{32}$-inch wood structural panels with exterior glue and a layer of 1-inch nominal tongue-and-groove finished flooring or $^{19}/_{32}$-inch wood structural panel finish flooring or a layer of Type I Grade M-1 particleboard not less than $^5/_8$-inch thick.

n. The ceiling shall be permitted to be omitted over unusable space, and flooring shall be permitted to be omitted where unusable space occurs above.

o. For properties of cooler or wallboard nails, see ASTM C514, ASTM C547 or ASTM F1667.

p. Thickness measured on top of steel deck unit.

q. Generic fire-resistance ratings (those not designated as PROPRIETARY* in the listing) in the GA-600 shall be accepted as if herein specified.

721.1.1 Thickness of protective coverings. The thickness of fire-resistant materials required for protection of structural members shall be not less than set forth in Table 721.1(1), except as modified in this section. The figures shown shall be the net thickness of the protecting materials and shall not include any hollow space in back of the protection.

721.1.2 Unit masonry protection. Where required, metal ties shall be embedded in bed joints of unit masonry for protection of steel columns. Such ties shall be as set forth in Table 721.1(1) or be equivalent thereto.

721.1.3 Reinforcement for cast-in-place concrete column protection. Cast-in-place concrete protection for steel columns shall be reinforced at the edges of such members with wire ties of not less than 0.18 inch (4.6 mm) in diameter wound spirally around the columns on a pitch of not more than 8 inches (203 mm) or by equivalent reinforcement.

721.1.4 Plaster application. The finish coat is not required for plaster protective coatings where those coatings comply with the design mix and thickness requirements of Tables 721.1(1), 721.1(2) and 721.1(3).

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721.1.5 Bonded prestressed concrete tendons. For members having a single tendon or more than one tendon installed with equal concrete cover measured from the nearest surface, the cover shall be not less than that set forth in Table 721.1(1). For members having multiple tendons installed with variable concrete cover, the average tendon cover shall be not less than that set forth in Table 721.1(1), provided that:

1. The clearance from each tendon to the nearest exposed surface is used to determine the average cover.
2. The clear cover for individual tendons shall not be less than one-half of that set forth in Table 721.1(1). A minimum cover of $^3/_4$ inch (19.1 mm) for slabs and 1 inch (25 mm) for beams is required for any aggregate concrete.
3. For the purpose of establishing a fire-resistance rating, tendons having a clear covering less than that set forth in Table 721.1(1) shall not contribute more than 50 percent of the required ultimate moment capacity for members less than 350 square inches (0.226 m^2) in cross-sectional area and 65 percent for larger members. For structural design purposes, however, tendons having a reduced cover are assumed to be fully effective.

721.2 Cellular concrete. [HCD 1 & HCD 2]

721.2.1 Use and application. [HCD 1 & HCD 2] *Controlled-density cellular concrete, when used or applied, shall be in accordance with the use of materials in Bulletin No. 65 of the Federal Housing Administration, United States Department of Housing and Urban Development.*

Exceptions:

1. *Regardless of the provisions of Subsections 3.2, 3.3, 3.4 and 3.6 in Section 3, Bulletin No. 65 provisions relating to proportioning, mixing and testing, in the following shall apply to this chapter.*

   1.1. Field-control weighings for control of the wet-unit weight shall be made. The design wet-unit weight for field control of the concrete shall be based on previously established data for the relation between the wet-unit weight and the air-dry-unit weight at 28 days for the mix being placed. Field-control weighings for determining the wet-unit weight shall be made at the mixer discharge and at the point of deposit. There should be one pair of weighings per batch for batch-type mixers unless equipment is provided with scales allowing the operator to adequately weigh materials.

   For continuous weight-instrumented batch mixers, there should be one pair of weighings per 10 cubic yards (7.65 m^3). The gain in unit weight between the mixer discharge and point of deposit shall not exceed 5 percent. The wet-unit weight at the point of deposit of the concrete shall not exceed plus 5 percent of the design wet-unit weight. A variation exceeding plus 5 percent of the design wet-unit weight shall require a modification of the mix proportions, a change of materials or a change in the mixing procedure.

1.2. When tests are required by the enforcing agency, they shall be performed in the following manner:

Two test cylinders, for compressive strength tests, shall be made for each 8,000 square feet (743 m^2) of surface area placed. A minimum of two test cylinders shall be made each day. Each strength test result shall be the average of two cylinders from the same sample tested at 28 days or at a specified earlier date.

1.3. The minimum air-dry density shall be 90 pounds per cubic foot (1,440 kg/m^3). The minimum design compressive strength shall be 1,000 psi (6,890 kPa) when the curing procedure specified herein is applied. The minimum design compressive strength shall be 1,250 psi (8,619 kPa) if the slab is placed in a covered area of a building and a specified curing medium is not applied. The specified design compressive strength shall be increased 20 percent when the specified strength is greater than 1,000 psi (6,890 kPa) and the slab is placed in a covered area of a building and a specified curing medium is not applied.

1.4. The cellular concrete shall be sampled at the point of deposit in accordance with the applicable procedures of ASTM C172, Sampling Fresh Concrete. Cylinder molds shall be either 3 inches by 6 inches (76 mm by 152 mm) or 6 inches by 12 inches (152 mm by 305 mm). Lightly tap the sides of the mold with a rubber hammer while filling the mold instead of rodding the mix. Moist cure the specimens for seven days at 73.4°F (40.8°C) plus or minus 3°F (1.7°C). At the age of seven days, remove the specimens from the moist condition and store in a temperature of 73.4°F (40.8°C) plus or minus 3°F (1.7°C) and a relative humidity of 50 plus or minus 10 percent for 21 days; remove and air dry until the time of test at 28 days. The compressive strength test shall be in accordance with ASTM C39, Compressive Strength of Cylindrical Concrete Specimens. Determine the air-dry-unit weight at 28 days.

2. *Regardless of the provisions of Subsections 4.1 and 4.2 in Section 4 of Bulletin No. 65, relating to placing, finishing and curing, the following shall apply to these regulations.*

   2.1. The concrete shall be placed, finished and cured to produce a level, smooth surface. The concrete shall be placed in a single layer to a minimum thickness of $1^1/_2$ inches (38 mm). The deviation from a plan shall not exceed $^1/_4$ inch (6 mm) in any 10 feet (3048 mm). The final finish of the concrete shall be suitable for the application of the specified wear- resistant covering. Cracks wider than $^1/_8$ inch (3 mm) shall be repaired.

   2.2. Install a water-resistant membrane between wood or plywood subfloors and the cellular concrete to prevent leakage of the concrete and wetting of the subfloor. The membrane shall consist of waterproof paper or plastic sheets conforming to ASTM C171, Sheet Materials for Curing Concrete, or Type 15 roofing felt conforming to ASTM D226, D250 or D227, or Federal Specification UUB790, Building Paper Vegetable Fiber: (Kraft, Waterproofed, Water Repellent and Fire-resistant) Type 1, Grade B. The sheets shall be securely fastened to the subfloor.

3. *Regardless of the provisions of Subsections 6.1 and 6.2 in Section 6, of Bulletin No. 65, relating to applicator qualifications and warranty, these subsections are omitted from this chapter.*

SECTION 722—CALCULATED FIRE RESISTANCE

722.1 General. The provisions of this section contain procedures by which the fire resistance of specific materials or combinations of materials is established by calculations. These procedures apply only to the information contained in this section and shall not be otherwise used. The calculated fire resistance of specific materials or combinations of materials shall be established by one of the following:

1. Concrete, concrete masonry and clay masonry assemblies shall be permitted in accordance with ACI 216.1/TMS 0216.
2. Precast and precast, prestressed concrete assemblies shall be permitted in accordance with PCI 124.
3. Steel assemblies shall be permitted in accordance with Chapter 5 of ASCE 29.
4. Exposed wood members and wood decking shall be permitted in accordance with Chapter 16 of ANSI/AWC NDS.

722.2 Concrete assemblies. The provisions of this section contain procedures by which the fire-resistance ratings of concrete assemblies are established by calculations.

722.2.1 Concrete walls. Cast-in-place and precast concrete walls shall comply with Section 722.2.1.1. Multiwythe concrete walls shall comply with Section 722.2.1.2. Joints between precast panels shall comply with Section 722.2.1.3. Concrete walls with gypsum wallboard or plaster finish shall comply with Section 722.2.1.4.

722.2.1.1 Cast-in-place or precast walls. The minimum equivalent thicknesses of cast-in-place or precast concrete walls for fire-resistance ratings of 1 hour to 4 hours are shown in Table 722.2.1.1. For solid walls with flat vertical surfaces, the equivalent thickness is the same as the actual thickness. The values in Table 722.2.1.1 apply to plain, reinforced or prestressed concrete walls.

TABLE 722.2.1.1—MINIMUM EQUIVALENT THICKNESS OF CAST-IN-PLACE OR PRECAST CONCRETE WALLS, LOAD-BEARING OR NONLOAD-BEARING

CONCRETE TYPE	MINIMUM SLAB THICKNESS (inches) FOR FIRE-RESISTANCE RATING OF				
	1 hour	$1^1/_2$ hours	2 hours	3 hours	4 hours
Siliceous	3.5	4.3	5.0	6.2	7.0
Carbonate	3.2	4.0	4.6	5.7	6.6
Sand-lightweight	2.7	3.3	3.8	4.6	5.4
Lightweight	2.5	3.1	3.6	4.4	5.1

For SI: 1 inch = 25.4 mm.

722.2.1.1.1 Hollow-core precast wall panels. For hollow-core precast concrete wall panels in which the cores are of constant cross section throughout the length, calculation of the equivalent thickness by dividing the net cross-sectional area (the gross cross section minus the area of the cores) of the panel by its width shall be permitted

722.2.1.1.2 Core spaces filled. Where all of the core spaces of hollow-core wall panels are filled with loose-fill material, such as expanded shale, clay or slag, or vermiculite or perlite, the fire-resistance rating of the wall is the same as that of a solid wall of the same concrete type and of the same overall thickness.

722.2.1.1.3 Tapered cross sections. The thickness of panels with tapered cross sections shall be that determined at a distance $2t$ or 6 inches (152 mm), whichever is less, from the point of minimum thickness, where t is the minimum thickness.

722.2.1.1.4 Ribbed or undulating surfaces. The equivalent thickness of panels with ribbed or undulating surfaces shall be determined by one of the following expressions:

For $s \geq 4t$, the thickness to be used shall be t

For $s \leq 2t$, the thickness to be used shall be t_e

For $4t > s > 2t$, the thickness to be used shall be

Equation 7-3 $$t + \left(\frac{4t}{s} - 1\right)(t_e - t)$$

where:

s = Spacing of ribs or undulations.

t = Minimum thickness.

t_e = Equivalent thickness of the panel calculated as the net cross-sectional area of the panel divided by the width, in which the maximum thickness used in the calculation shall not exceed $2t$.

722.2.1.2 Multiwythe walls. For walls that consist of two wythes of different types of concrete, the fire-resistance ratings shall be permitted to be determined from Figure 722.2.1.2.

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FIGURE 722.2.1.2—FIRE-RESISTANCE RATINGS OF TWO-WYTHE CONCRETE WALLS

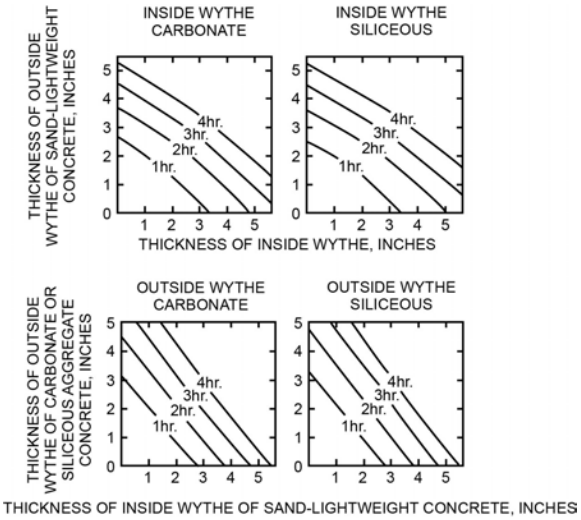
INSIDE WYTHE CARBONATE
INSIDE WYTHE SILICEOUS
THICKNESS OF OUTSIDE WYTHE OF SAND-LIGHTWEIGHT CONCRETE, INCHES
4hr.
3hr.
2hr.
1hr.
THICKNESS OF INSIDE WYTHE, INCHES
OUTSIDE WYTHE CARBONATE
OUTSIDE WYTHE SILICEOUS
THICKNESS OF OUTSIDE WYTHE OF CARBONATE OR SILICEOUS AGGREGATE CONCRETE, INCHES
THICKNESS OF INSIDE WYTHE OF SAND-LIGHTWEIGHT CONCRETE, INCHES

TABLE 722.2.1.2(1)—VALUES OF $R_n^{0.59}$ FOR USE IN EQUATION 7-4

TYPE OF MATERIAL	THICKNESS OF MATERIAL (inches)											
	$1^1/_2$	2	$2^1/_2$	3	$3^1/_2$	4	$4^1/_2$	5	$5^1/_2$	6	$6^1/_2$	7
Siliceous aggregate concrete	5.3	6.5	8.1	9.5	11.3	13.0	14.9	16.9	18.8	20.7	22.8	25.1
Carbonate aggregate concrete	5.5	7.1	8.9	10.4	12.0	14.0	16.2	18.1	20.3	21.9	24.7	27.2[c]
Sand-lightweight concrete	6.5	8.2	10.5	12.8	15.5	18.1	20.7	23.3	26.0[c]	Note c	Note c	Note c
Lightweight concrete	6.6	8.8	11.2	13.7	16.5	19.1	21.9	24.7	27.8[c]	Note c	Note c	Note c
Insulating concrete[a]	9.3	13.3	16.6	18.3	23.1	26.5[c]	Note c	Note c	Note c	Note c	Note c	Note c
Airspace[b]	—	—	—	—	—	—	—	—	—	—	—	—

For SI: 1 inch = 25.4 mm, 1 pound per cubic foot = 16.02 kg/m^3.

a. Dry unit weight of 35 pcf or less and consisting of cellular, perlite or *vermiculite* concrete.

b. The $R_n^{0.59}$ value for one $^1/_2$" to $3^1/_2$" airspace is 3.3. The $R_n^{0.59}$ value for two $^1/_2$" to $3^1/_2$" airspaces is 6.7.

c. The fire-resistance rating for this thickness exceeds 4 hours.

TABLE 722.2.1.2(2)—FIRE-RESISTANCE RATINGS BASED ON $R^{0.59}$

R^a, MINUTES	$R^{0.59}$
60	11.20
120	16.85
180	21.41
240	25.37

a. Based on Equation 7-4.

For SI: 1 inch = 25.4 mm.

722.2.1.2.1 Two or more wythes. The fire-resistance rating for wall panels consisting of two or more wythes shall be permitted to be determined by the formula:

Equation 7-4 $$R = (R_1^{0.59} + R_2^{0.59} + \ldots + R_n^{0.59})^{1.7}$$

where:

R = The fire endurance of the assembly, minutes.

R_1, R_2, *and* R_n = The fire endurances of the individual wythes, minutes. Values of $R_n^{0.59}$ for use in Equation 7-4 are given in Table 722.2.1.2(1). Calculated fire-resistance ratings are shown in Table 722.2.1.2(2).

722.2.1.2.2 Foam plastic insulation. The fire-resistance ratings of precast concrete wall panels consisting of a layer of foam plastic insulation sandwiched between two wythes of concrete shall be permitted to be determined by use of Equation 7-4. Foam plastic insulation with a total thickness of less than 1 inch (25 mm) shall be disregarded. The R_n value for thickness of foam plastic insulation of 1 inch (25 mm) or greater, for use in the calculation, is 5 minutes; therefore $R_n^{0.59} = 2.5$.

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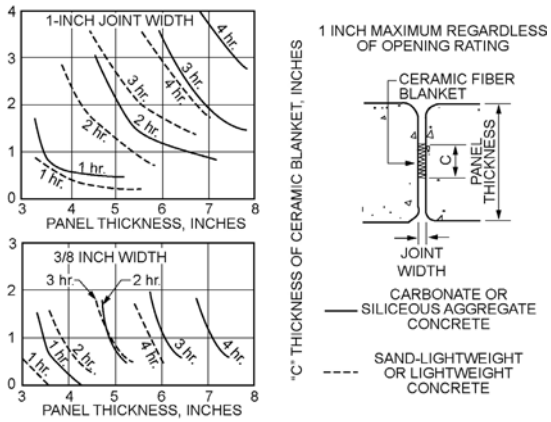
722.2.1.3 Joints between precast wall panels. Joints between precast concrete wall panels that are not insulated as required by this section shall be considered as openings in walls. Uninsulated joints shall be included in determining the percentage of openings permitted by Table 705.9. Where openings are not permitted or are required by this code to be protected, the provisions of this section shall be used to determine the amount of joint insulation required. Insulated joints shall not be considered openings for purposes of determining compliance with the allowable percentage of openings in Table 705.9.

722.2.1.3.1 Ceramic fiber joint protection. Figure 722.2.1.3.1 shows thicknesses of ceramic fiber blankets to be used to insulate joints between precast concrete wall panels for various panel thicknesses and for joint widths of $^{3}/_{8}$ inch (9.5 mm) and 1 inch (25 mm) for fire-resistance ratings of 1 hour to 4 hours. For joint widths between $^{3}/_{8}$ inch (9.5 mm) and 1 inch (25 mm), the thickness of ceramic fiber blanket is allowed to be determined by direct interpolation. Other tested and labeled materials are acceptable in place of ceramic fiber blankets.

FIGURE 722.2.1.3.1—CERAMIC FIBER JOINT PROTECTION



For SI: 1 inch = 25.4 mm.

722.2.1.4 Concrete walls with gypsum wallboard or plaster finishes. The fire-resistance rating of cast-in-place or precast concrete walls with finishes of gypsum wallboard or plaster applied to one or both sides shall be permitted to be calculated in accordance with the provisions of this section

TABLE 722.2.1.4(1)—MULTIPLYING FACTOR FOR FINISHES ON NONFIRE-EXPOSED SIDE OF CONCRETE OR CONCRETE MASONRY WALL

TYPE OF FINISH APPLIED TO CONCRETE OR CONCRETE MASONRY WALL	TYPE OF AGGREGATE USED IN CONCRETE OR CONCRETE MASONRY			
	Concrete: siliceous or carbonate concrete masonry: siliceous or carbonate; solid clay brick	Concrete: sand-lightweight concrete masonry: clay tile; hollow clay brick; concrete masonry units of expanded shale and < 20% sand	Concrete: lightweight concrete masonry: concrete masonry units of expanded shale, expanded clay, expanded slag, or pumice < 20% sand	Concrete masonry: concrete masonry units of expanded slag, expanded clay, or pumice
Portland cement-sand plaster	1.00	0.75[a]	0.75[a]	0.50[a]
Gypsum-sand plaster	1.25	1.00	1.00	1.00
Gypsum-vermiculite or perlite plaster	1.75	1.50	1.25	1.25
Gypsum wallboard	3.00	2.25	2.25	2.25

For SI: 1 inch = 25.4 mm.

a. For Portland cement-sand plaster $^{5}/_{8}$ inch or less in thickness and applied directly to the concrete or concrete masonry on the nonfire-exposed side of the wall, the multiplying factor shall be 1.00.

TABLE 722.2.1.4(2)—TIME ASSIGNED TO FINISH MATERIALS ON FIRE-EXPOSED SIDE OF WALL[a]

FINISH DESCRIPTION	TIME[b] (minutes)
Gypsum wallboard	
$^{3}/_{8}$ inch	10
$^{1}/_{2}$ inch	15
$^{5}/_{8}$ inch	20
2 layers of $^{3}/_{8}$ inch	25

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TABLE 722.2.1.4(2)—TIME ASSIGNED TO FINISH MATERIALS ON FIRE-EXPOSED SIDE OF WALL[a]—continued	
FINISH DESCRIPTION	**TIME[b] (minutes)**
1 layer of $^3/_8$ inch, 1 layer of $^1/_2$ inch	35
2 layers of $^1/_2$ inch	40
Type X gypsum wallboard	
$^1/_2$ inch	25
$^5/_8$ inch	40
Portland cement-sand plaster applied directly to concrete masonry	See Note c
Portland cement-sand plaster on metal lath	
$^3/_4$ inch	20
$^7/_8$ inch	25
1 inch	30
Gypsum sand plaster on $^3/_8$-inch gypsum lath	
$^1/_2$ inch	35
$^5/_8$ inch	40
$^3/_4$ inch	50
Gypsum sand plaster on metal lath	
$^3/_4$ inch	50
$^7/_8$ inch	60
1 inch	80

For SI: 1 inch = 25.4 mm.

a. This table applies to precast concrete, cast-in-place concrete, or masonry walls.

b. The time assigned is not a finish rating.

c. The actual thickness of Portland cement-sand plaster, provided that it is $^5/_8$ inch or less in thickness, shall be permitted to be included in determining the equivalent thickness of the masonry for use in Table 722.3.2.

722.2.1.4.1 Nonfire-exposed side. Where the finish of gypsum wallboard or plaster is applied to the side of the wall not exposed to fire, the contribution of the finish to the total fire-resistance rating shall be determined as follows: The thickness of the finish shall first be corrected by multiplying the actual thickness of the finish by the applicable factor determined from Table 722.2.1.4(1) based on the type of aggregate in the concrete. The corrected thickness of finish shall then be added to the actual or equivalent thickness of concrete and fire-resistance rating of the concrete and finish determined from Tables 722.2.1.1 and 722.2.1.2(1) and Figure 722.2.1.2.

722.2.1.4.2 Fire-exposed side. Where gypsum wallboard or plaster is applied to the fire-exposed side of the wall, the contribution of the finish to the total fire-resistance rating shall be determined as follows: The time assigned to the finish as established by Table 722.2.1.4(2) shall be added to the fire-resistance rating determined from Tables 722.2.1.1 and 722.2.1.2(1) and Figure 722.2.1.2 for the concrete alone, or to the rating determined in Section 722.2.1.4.1 for the concrete and finish on the nonfire-exposed side.

722.2.1.4.3 Nonsymmetrical assemblies. For a wall without finish on one side or having different types or thicknesses of finish on each side, the calculation procedures of Sections 722.2.1.4.1 and 722.2.1.4.2 shall be performed twice, assuming either side of the wall to be the fire-exposed side. The fire-resistance rating of the wall shall not exceed the lower of the two values.

Exception: For an exterior wall with a fire separation distance greater than 5 feet (1524 mm) the fire shall be assumed to occur on the interior side only.

722.2.1.4.4 Minimum concrete fire-resistance rating. Where finishes applied to one or both sides of a concrete wall contribute to the fire-resistance rating, the concrete alone shall provide not less than one-half of the total required fire-resistance rating. Additionally, the contribution to the fire resistance of the finish on the nonfire-exposed side of a load-bearing wall shall not exceed one-half the contribution of the concrete alone.

722.2.1.4.5 Concrete finishes. Finishes on concrete walls that are assumed to contribute to the total fire-resistance rating of the wall shall comply with the installation requirements of Section 722.3.2.5.

722.2.2 Concrete floor and roof slabs. Reinforced and prestressed floors and roofs shall comply with Section 722.2.2.1. Multicourse floors and roofs shall comply with Sections 722.2.2.2 and 722.2.2.3, respectively.

722.2.2.1 Reinforced and prestressed floors and roofs. The minimum thicknesses of reinforced and prestressed concrete floor or roof slabs for fire-resistance ratings of 1 hour to 4 hours are shown in Table 722.2.2.1.

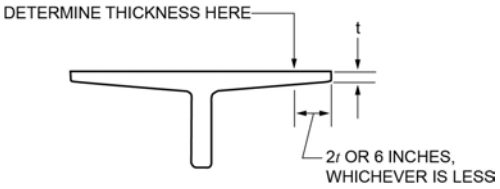
Exception: Minimum thickness shall not be required for floors and ramps within parking garages constructed in accordance with Sections 406.5 and 406.6.

TABLE 722.2.2.1—MINIMUM SLAB THICKNESS (inches)					
CONCRETE TYPE	FIRE-RESISTANCE RATING (hours)				
	1	$1^1/_2$	2	3	4
Siliceous	3.5	4.3	5	6.2	7
Carbonate	3.2	4	4.6	5.7	6.6
Sand-lightweight	2.7	3.3	3.8	4.6	5.4
Lightweight	2.5	3.1	3.6	4.4	5.1
For SI: 1 inch = 25.4 mm.					

722.2.2.1.1 Hollow-core prestressed slabs. For hollow-core prestressed concrete slabs in which the cores are of constant cross section throughout the length, the equivalent thickness shall be permitted to be obtained by dividing the net cross-sectional area of the slab including grout in the joints, by its width.

722.2.2.1.2 Slabs with sloping soffits. The thickness of slabs with sloping soffits (see Figure 722.2.2.1.2) shall be determined at a distance 2*t* or 6 inches (152 mm), whichever is less, from the point of minimum thickness, where *t* is the minimum thickness.

FIGURE 722.2.2.1.2—DETERMINATION OF SLAB THICKNESS FOR SLOPING SOFFITS



For SI: 1 inch = 25.4 mm.

722.2.2.1.3 Slabs with ribbed soffits. The thickness of slabs with ribbed or undulating soffits (see Figure 722.2.2.1.3) shall be determined by one of the following expressions, whichever is applicable:

For $s > 4t$, the thickness to be used shall be t

For $s \le 2t$, the thickness to be used shall be t_e

For $4t > s > 2t$, the thickness to be used shall be

Equation 7-5 $$t + \left(\frac{4t}{s} - 1\right)(t_e - t)$$

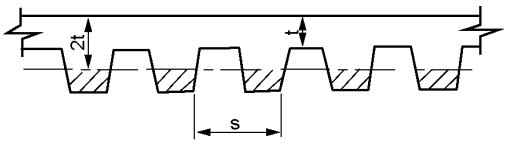
where:

s = Spacing of ribs or undulations.

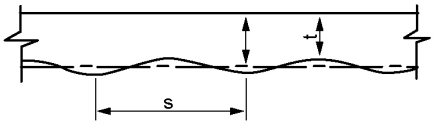
t = Minimum thickness.

t_e = Equivalent thickness of the slab calculated as the net area of the slab divided by the width, in which the maximum thickness used in the calculation shall not exceed 2t.

FIGURE 722.2.2.1.3—SLABS WITH RIBBED OR UNDULATING SOFFITS



NEGLECT SHADED AREA IN CALCULATION OF EQUIVALENT THICKNESS



For SI: 1 inch = 25.4 mm.

722.2.2.1.4 Flat plate concrete slabs with uniformly spaced hollow voids. Table 722.2.2.1 shall be used to determine the 1- and 2-hour fire-resistance ratings for flat plate concrete slabs with uniformly spaced hollow voids. The equivalent thickness of the slab shall be determined by dividing the net concrete volume of the slab by the floor area. The net concrete volume of the slab shall be equal to the volume of concrete of a solid slab minus the average concrete volume displaced by the hollow voids.

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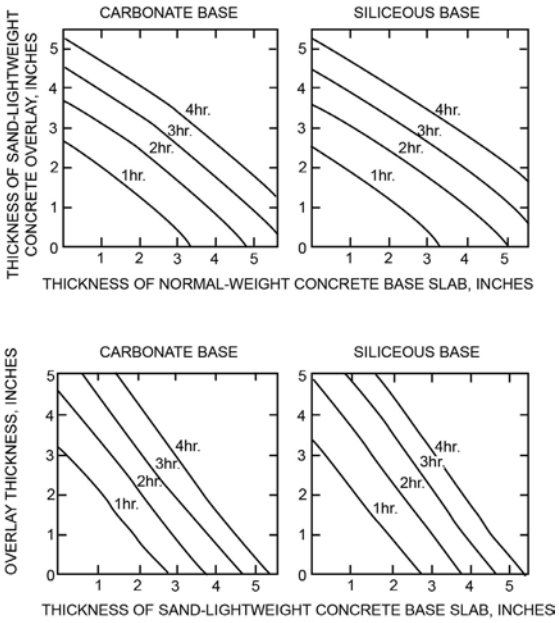
722.2.2.2 Multicourse floors. The fire-resistance ratings of floors that consist of a base slab of concrete with a topping (overlay) of a different type of concrete shall comply with Figure 722.2.2.2.

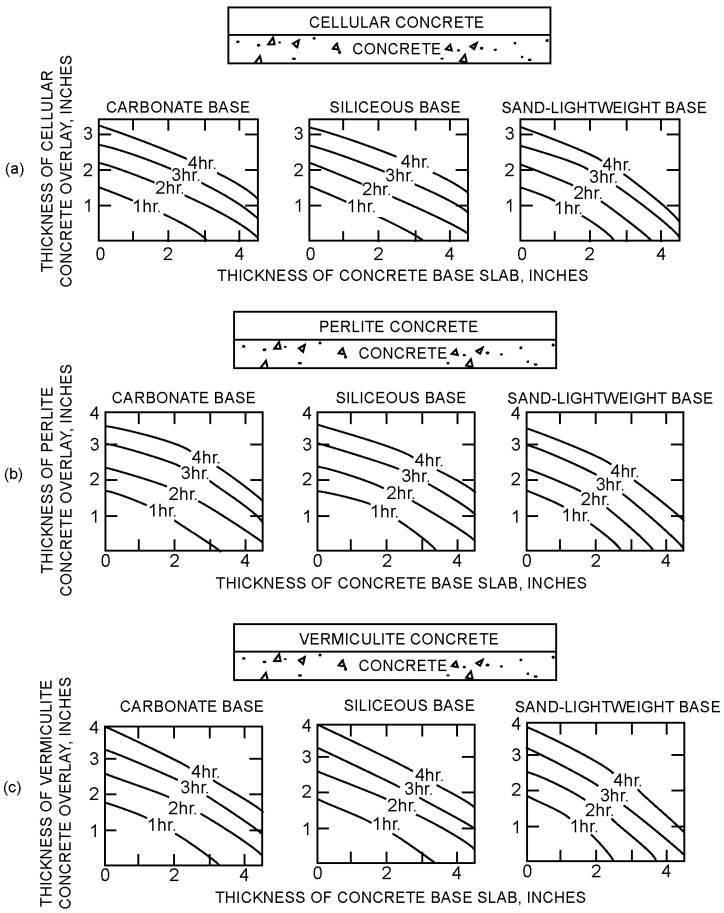
FIGURE 722.2.2.2—FIRE-RESISTANCE RATINGS FOR TWO-COURSE CONCRETE FLOORS



For SI: 1 inch = 25.4 mm.

722.2.2.3 Multicourse roofs. The fire-resistance ratings of roofs that consist of a base slab of concrete with a topping (overlay) of an insulating concrete or with an insulating board and built-up roofing shall comply with Figures 722.2.2.3(1) and 722.2.2.3(2).

FIGURE 722.2.2.3(1)—FIRE-RESISTANCE RATINGS FOR CONCRETE ROOF ASSEMBLIES



For SI: 1 inch = 25.4 mm.

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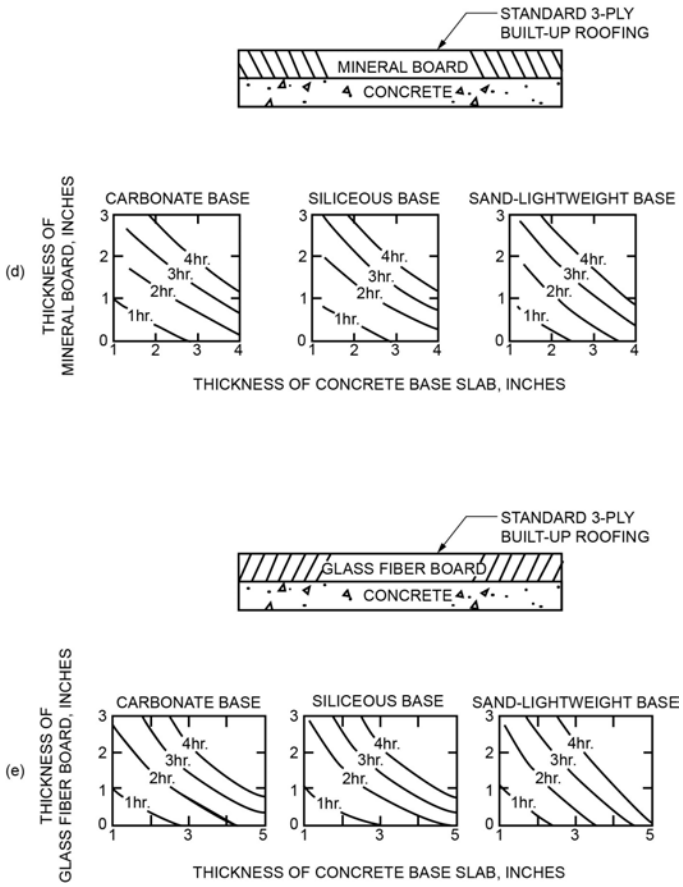
FIGURE 722.2.2.3(2)—FIRE-RESISTANCE RATINGS FOR CONCRETE ROOF ASSEMBLIES



For SI: 1 inch = 25.4 mm.

722.2.2.3.1 Heat transfer. For the transfer of heat, three-ply built-up roofing contributes 10 minutes to the fire-resistance rating. The fire-resistance rating for concrete assemblies such as those shown in Figure 722.2.2.3(1) shall be increased by 10 minutes. This increase is not applicable to those shown in Figure 722.2.2.3(2).

722.2.2.4 Joints in precast slabs. Joints between adjacent precast concrete slabs need not be considered in calculating the slab thickness provided that a concrete topping not less than 1 inch (25 mm) thick is used. Where concrete topping is not used, joints must be grouted to a depth of not less than one-third the slab thickness at the joint, but not less than 1 inch (25 mm), or the joints must be made fire resistant by other approved methods.

722.2.3 Concrete cover over reinforcement. The minimum thickness of concrete cover over reinforcement in concrete slabs, reinforced beams and prestressed beams shall comply with this section.

TABLE 722.2.3(1)—COVER THICKNESS FOR REINFORCED CONCRETE FLOOR OR ROOF SLABS (inches)

CONCRETE AGGREGATE TYPE	FIRE-RESISTANCE RATING (hours)									
	Restrained					Unrestrained				
	1	1 1/2	2	3	4	1	1 1/2	2	3	4
Siliceous	3/4	3/4	3/4	3/4	3/4	3/4	3/4	1	1 1/4	1 5/8
Carbonate	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	1 1/4	1 1/4
Sand-lightweight or lightweight	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	1 1/4	1 1/4

For SI: 1 inch = 25.4 mm.

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TABLE 722.2.3(2)—COVER THICKNESS FOR PRESTRESSED CONCRETE FLOOR OR ROOF SLABS (inches)

CONCRETE AGGREGATE TYPE	FIRE-RESISTANCE RATING (hours)									
	Restrained					Unrestrained				
	1	1 1/2	2	3	4	1	1 1/2	2	3	4
Siliceous	3/4	3/4	3/4	3/4	3/4	1 1/8	1 1/2	1 3/4	2 3/8	2 3/4
Carbonate	3/4	3/4	3/4	3/4	3/4	1	1 3/8	1 5/8	2 1/8	2 1/4
Sand-lightweight or lightweight	3/4	3/4	3/4	3/4	3/4	1	1 3/8	1 1/2	2	2 1/4

For SI: 1 inch = 25.4 mm.

TABLE 722.2.3(3)—MINIMUM COVER FOR MAIN REINFORCING BARS OF REINFORCED CONCRETE BEAMS[c] (APPLICABLE TO ALL TYPES OF STRUCTURAL CONCRETE)

RESTRAINED OR UNRESTRAINED[a]	BEAM WIDTH[b] (inches)	FIRE-RESISTANCE RATING (hours)				
		1	1 1/2	2	3	4
Restrained	5	3/4	3/4	3/4	1[a]	1 1/4[a]
	7	3/4	3/4	3/4	3/4	3/4
	≥ 10	3/4	3/4	3/4	3/4	3/4
Unrestrained	5	3/4	1	1 1/4	—	—
	7	3/4	3/4	3/4	1 3/4	3
	≥ 10	3/4	3/4	3/4	1	1 3/4

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

a. Tabulated values for restrained assemblies apply to beams spaced more than 4 feet on center. For restrained beams spaced 4 feet or less on center, minimum cover of 3/4 inch is adequate for ratings of 4 hours or less.

b. For beam widths between the tabulated values, the minimum cover thickness can be determined by direct interpolation.

c. The cover for an individual reinforcing bar is the minimum thickness of concrete between the surface of the bar and the fire-exposed surface of the beam. For beams in which several bars are used, the cover for corner bars used in the calculation shall be reduced to one-half of the actual value. The cover for an individual bar must be not less than one-half of the value given in Table 722.2.3(3) nor less than 3/4 inch.

TABLE 722.2.3(4)—MINIMUM COVER FOR PRESTRESSED CONCRETE BEAMS 8 INCHES OR GREATER IN WIDTH[b]

RESTRAINED OR UNRESTRAINED[a]	CONCRETE AGGREGATE TYPE	BEAM WIDTH (inches)	FIRE-RESISTANCE RATING (hours)				
			1	1 1/2	2	3	4
Restrained	Carbonate or siliceous	8	1 1/2	1 1/2	1 1/2	1 3/4[a]	2 1/2[a]
	Carbonate or siliceous	≥ 12	1 1/2	1 1/2	1 1/2	1 1/2	1 7/8[a]
	Sand lightweight	8	1 1/2	1 1/2	1 1/2	1 1/2	2[a]
	Sand lightweight	≥ 12	1 1/2	1 1/2	1 1/2	1 1/2	1 5/8[a]
Unrestrained	Carbonate or siliceous	8	1 1/2	1 3/4	2 1/2	5[c]	—
	Carbonate or siliceous	≥ 12	1 1/2	1 1/2	1 7/8[a]	2 1/2	3
	Sand lightweight	8	1 1/2	1 1/2	2	3 1/4	—
	Sand lightweight	≥ 12	1 1/2	1 1/2	1 5/8	2	2 1/2

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

a. Tabulated values for restrained assemblies apply to beams spaced more than 4 feet on center. For restrained beams spaced 4 feet or less on center, minimum cover of 3/4 inch is adequate for 4-hour ratings or less.

b. For beam widths between 8 inches and 12 inches, minimum cover thickness can be determined by direct interpolation.

c. Not practical for 8-inch-wide beam but shown for purposes of interpolation.

TABLE 722.2.3(5)—MINIMUM COVER FOR PRESTRESSED CONCRETE BEAMS OF ALL WIDTHS

RESTRAINED OR UNRESTRAINED [a]	CONCRETE AGGREGATE TYPE	BEAM AREA[b] A (square inches)	FIRE-RESISTANCE RATING (hours)				
			1	1 1/2	2	3	4
Restrained	All	40 ≤ A ≤ 150	1 1/2	1 1/2	2	2 1/2	—
	Carbonate or siliceous	150 < A ≤ 300	1 1/2	1 1/2	1 1/2	1 3/4	2 1/2
		300 < A	1 1/2	1 1/2	1 1/2	1 1/2	2
	Sand lightweight	150 < A	1 1/2	1 1/2	1 1/2	1 1/2	2

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TABLE 722.2.3(5)—MINIMUM COVER FOR PRESTRESSED CONCRETE BEAMS OF ALL WIDTHS—continued							
RESTRAINED OR UNRESTRAINED [a]	CONCRETE AGGREGATE TYPE	BEAM AREA[b] A (square inches)	FIRE-RESISTANCE RATING (hours)				
			1	1 1/2	2	3	4
Unrestrained	All	40 ≤ A ≤ 150	2	2 1/2	—	—	—
	Carbonate or siliceous	150 < A ≤ 300	1 1/2	1 3/4	2 1/2	—	—
		300 < A	1 1/2	1 1/2	2	3[c]	4[c]
	Sand lightweight	150 < A	1 1/2	1 1/2	2	3[c]	4[c]

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 square inch = 645.2 mm^2.

a. Tabulated values for restrained assemblies apply to beams spaced more than 4 feet on center. For restrained beams spaced 4 feet or less on center, minimum cover of 3/4 inch is adequate for 4-hour ratings or less.

b. The cross-sectional area of a stem is permitted to include a portion of the area in the flange, provided that the width of the flange used in the calculation does not exceed three times the average width of the stem.

c. U-shaped or hooped stirrups spaced not to exceed the depth of the member and having a minimum cover of 1 inch shall be provided.

722.2.3.1 Slab cover. The minimum thickness of concrete cover to the positive moment reinforcement shall comply with Table 722.2.3(1) for reinforced concrete and Table 722.2.3(2) for prestressed concrete. These tables are applicable for solid or hollow-core one-way or two-way slabs with flat undersurfaces. These tables are applicable to slabs that are either cast in place or precast. For precast prestressed concrete not covered elsewhere, the procedures contained in PCI 124 shall be acceptable.

722.2.3.2 Reinforced beam cover. The minimum thickness of concrete cover to the positive moment reinforcement (bottom steel) for reinforced concrete beams is shown in Table 722.2.3(3) for fire-resistance ratings of 1 hour to 4 hours.

722.2.3.3 Prestressed beam cover. The minimum thickness of concrete cover to the positive moment prestressing tendons (bottom steel) for restrained and unrestrained prestressed concrete beams and stemmed units shall comply with the values shown in Tables 722.2.3(4) and 722.2.3(5) for fire-resistance ratings of 1 hour to 4 hours. Values in Table 722.2.3(4) apply to beams 8 inches (203 mm) or greater in width. Values in Table 722.2.3(5) apply to beams or stems of any width, provided that the cross-section area is not less than 40 square inches (25 806 mm^2). In case of differences between the values determined from Table 722.2.3(4) or 722.2.3(5), it is permitted to use the smaller value. The concrete cover shall be calculated in accordance with Section 722.2.3.3.1. The minimum concrete cover for nonprestressed reinforcement in prestressed concrete beams shall comply with Section 722.2.3.2.

722.2.3.3.1 Calculating concrete cover. The concrete cover for an individual tendon is the minimum thickness of concrete between the surface of the tendon and the fire-exposed surface of the beam, except that for ungrouted ducts, the assumed cover thickness is the minimum thickness of concrete between the surface of the duct and the fire-exposed surface of the beam. For beams in which two or more tendons are used, the cover is assumed to be the average of the minimum cover of the individual tendons. For corner tendons (tendons equal distance from the bottom and side), the minimum cover used in the calculation shall be one-half the actual value. For stemmed members with two or more prestressing tendons located along the vertical centerline of the stem, the average cover shall be the distance from the bottom of the member to the centroid of the tendons. The actual cover for any individual tendon shall be not less than one-half the smaller value shown in Tables 722.2.3(4) and 722.2.3(5), or 1 inch (25 mm), whichever is greater.

722.2.4 Concrete columns. Concrete columns shall comply with this section.

TABLE 722.2.4—MINIMUM DIMENSION OF CONCRETE COLUMNS (inches)					
TYPES OF CONCRETE	FIRE-RESISTANCE RATING (hours)				
	1	1 1/2	2[a]	3[a]	4[b]
Siliceous	8	9	10	12	14
Carbonate	8	9	10	11	12
Sand-lightweight	8	8 1/2	9	10 1/2	12

For SI: 1 inch = 25 mm.

a. The minimum dimension is permitted to be reduced to 8 inches for rectangular columns with two parallel sides not less than 36 inches in length.

b. The minimum dimension is permitted to be reduced to 10 inches for rectangular columns with two parallel sides not less than 36 inches in length.

722.2.4.1 Minimum size. The minimum overall dimensions of reinforced concrete columns for fire-resistance ratings of 1 hour to 4 hours for exposure to fire on all sides shall comply with this section.

722.2.4.1.1 Concrete strength less than or equal to 12,000 psi. For columns made with concrete having a specified compressive strength, f'_c, of less than or equal to 12,000 psi (82.7 MPa), the minimum dimension shall comply with Table 722.2.4.

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722.2.4.1.2 Concrete strength greater than 12,000 psi. For columns made with concrete having a specified compressive strength, f'_c, greater than 12,000 psi (82.7 MPa), for fire-resistance ratings of 1 hour to 4 hours the minimum dimension shall be 24 inches (610 mm).

722.2.4.2 Minimum cover for R/C columns. The minimum thickness of concrete cover to the main longitudinal reinforcement in columns, regardless of the type of aggregate used in the concrete and the specified compressive strength of concrete, f'_c, shall be not less than 1 inch (25 mm) times the number of hours of required fire resistance or 2 inches (51 mm), whichever is less.

722.2.4.3 Tie and spiral reinforcement. For concrete columns made with concrete having a specified compressive strength, f'_c, greater than 12,000 psi (82.7 MPa), tie and spiral reinforcement shall comply with the following:

1. The free ends of rectangular ties shall terminate with a 135-degree (2.4 rad) standard tie hook.
2. The free ends of circular ties shall terminate with a 90-degree (1.6 rad) standard tie hook.
3. The free ends of spirals, including at lap splices, shall terminate with a 90-degree (1.6 rad) standard tie hook.

The hook extension at the free end of ties and spirals shall be the larger of six bar diameters and the extension required by Section 25.3.2 of ACI 318. Hooks shall project into the core of the column.

722.2.4.4 Columns built into walls. The minimum dimensions of Table 722.2.4 do not apply to a reinforced concrete column that is built into a concrete or masonry wall provided that all of the following are met:

1. The fire-resistance rating for the wall is equal to or greater than the required rating of the column.
2. The main longitudinal reinforcing in the column has cover not less than that required by Section 722.2.4.2.
3. Openings in the wall are protected in accordance with Section 716.

Where openings in the wall are not protected as required by Section 716, the minimum dimension of columns required to have a fire-resistance rating of 3 hours or less shall be 8 inches (203 mm), and 10 inches (254 mm) for columns required to have a fire-resistance rating of 4 hours, regardless of the type of aggregate used in the concrete.

722.2.4.5 Precast cover units for steel columns. See Section 722.5.1.4.

722.3 Concrete masonry. The provisions of this section contain procedures by which the fire-resistance ratings of concrete masonry are established by calculations.

722.3.1 Equivalent thickness. The equivalent thickness of concrete masonry construction shall be determined in accordance with the provisions of this section.

722.3.1.1 Concrete masonry unit plus finishes. The equivalent thickness of concrete masonry assemblies, T_{ea}, shall be computed as the sum of the equivalent thickness of the concrete masonry unit, T_e, as determined by Section 722.3.1.2, 722.3.1.3 or 722.3.1.4, plus the equivalent thickness of finishes, T_{ef}, determined in accordance with Section 722.3.2:

Equation 7-6 $T_{ea} = T_e + T_{ef}$

722.3.1.2 Ungrouted or partially grouted construction. T_e shall be the value obtained for the concrete masonry unit determined in accordance with ASTM C140.

722.3.1.3 Solid grouted construction. The equivalent thickness, T_e, of solid grouted concrete masonry units is the actual thickness of the unit.

722.3.1.4 Airspaces and cells filled with loose-fill material. The equivalent thickness of completely filled hollow concrete masonry is the actual thickness of the unit where loose-fill materials are: sand, pea gravel, crushed stone, or slag that meet ASTM C33 requirements; pumice, scoria, expanded shale, expanded clay, expanded slate, expanded slag, expanded fly ash, or cinders that comply with ASTM C331; or perlite or vermiculite meeting the requirements of ASTM C549 and ASTM C516, respectively.

722.3.2 Concrete masonry walls. The fire-resistance rating of walls and partitions constructed of concrete masonry units shall be determined from Table 722.3.2. The rating shall be based on the equivalent thickness of the masonry and type of aggregate used.

TABLE 722.3.2—MINIMUM EQUIVALENT THICKNESS (inches) OF BEARING OR NONBEARING CONCRETE MASONRY WALLS[a, b, c, d]

TYPE OF AGGREGATE	FIRE-RESISTANCE RATING (hours)														
	1/2	3/4	1	1 1/4	1 1/2	1 3/4	2	2 1/4	2 1/2	2 3/4	3	3 1/4	3 1/2	3 3/4	4
Pumice or expanded slag	1.5	1.9	2.1	2.5	2.7	3.0	3.2	3.4	3.6	3.8	4.0	4.2	4.4	4.5	4.7
Expanded shale, clay or slate	1.8	2.2	2.6	2.9	3.3	3.4	3.6	3.8	4.0	4.2	4.4	4.6	4.8	4.9	5.1
Limestone, cinders or unexpanded slag	1.9	2.3	2.7	3.1	3.4	3.7	4.0	4.3	4.5	4.8	5.0	5.2	5.5	5.7	5.9
Calcareous or siliceous gravel	2.0	2.4	2.8	3.2	3.6	3.9	4.2	4.5	4.8	5.0	5.3	5.5	5.8	6.0	6.2

For SI: 1 inch = 25.4 mm.

a. Values between those shown in the table can be determined by direct interpolation.

b. Where combustible members are framed into the wall, the thickness of solid material between the end of each member and the opposite face of the wall, or between members set in from opposite sides, shall be not less than 93 percent of the thickness shown in the table.

c. Requirements of ASTM C55, ASTM C73, ASTM C90 or ASTM C744 shall apply.

d. Minimum required equivalent thickness corresponding to the hourly fire-resistance rating for units with a combination of aggregate shall be determined by linear interpolation based on the percent by volume of each aggregate used in manufacture.

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722.3.2.1 Finish on nonfire-exposed side. Where plaster or gypsum wallboard is applied to the side of the wall not exposed to fire, the contribution of the finish to the total fire-resistance rating shall be determined as follows: The thickness of gypsum wallboard or plaster shall be corrected by multiplying the actual thickness of the finish by applicable factor determined from Table 722.2.1.4(1). This corrected thickness of finish shall be added to the equivalent thickness of masonry and the fire-resistance rating of the masonry and finish determined from Table 722.3.2.

722.3.2.2 Finish on fire-exposed side. Where plaster or gypsum wallboard is applied to the fire-exposed side of the wall, the contribution of the finish to the total fire-resistance rating shall be determined as follows: The time assigned to the finish as established by Table 722.2.1.4(2) shall be added to the fire-resistance rating determined in Section 722.3.2 for the masonry alone, or in Section 722.3.2.1 for the masonry and finish on the nonfire-exposed side.

722.3.2.3 Nonsymmetrical assemblies. For a wall without finish on one side or having different types or thicknesses of finish on each side, the calculation procedures of this section shall be performed twice, assuming either side of the wall to be the fire-exposed side. The fire-resistance rating of the wall shall not exceed the lower of the two values calculated.

Exception: For exterior walls with a fire separation distance greater than 5 feet (1524 mm), the fire shall be assumed to occur on the interior side only.

722.3.2.4 Minimum concrete masonry fire-resistance rating. Where the finish applied to a concrete masonry wall contributes to its fire-resistance rating, the masonry alone shall provide not less than one-half the total required fire-resistance rating.

722.3.2.5 Attachment of finishes. Installation of finishes shall be as follows:

1. Gypsum wallboard and gypsum lath applied to concrete masonry or concrete walls shall be secured to wood or steel furring members spaced not more than 16 inches (406 mm) on center (o.c.).
2. Gypsum wallboard shall be installed with the long dimension parallel to the furring members and shall have all joints finished.
3. Other aspects of the installation of finishes shall comply with the applicable provisions of Chapters 7 and 25.

722.3.3 Multiwythe masonry walls. The fire-resistance rating of wall assemblies constructed of multiple wythes of masonry materials shall be permitted to be based on the fire-resistance rating period of each wythe and the continuous airspace between each wythe in accordance with the following formula:

Equation 7-7 $$R_A = (R_1^{0.59} + R_2^{0.59} + \ldots + R_n^{0.59} + A_1 + A_2 + \ldots + A_n)^{1.7}$$

where:

R_A = *F*ire-resistance rating of the assembly (hours).

$R_1, R_2, \ldots, R_n$ = Fire-resistance rating of wythes for 1, 2, *n* (hours), respectively.

$A_1, A_2, \ldots, A_n$ = 0.30, factor for each continuous airspace for 1, 2, ...*n*, respectively, having a depth of $^1/_2$ inch (12.7 mm) or more between wythes.

722.3.4 Concrete masonry lintels. Fire-resistance ratings for concrete masonry lintels shall be determined based on the nominal thickness of the lintel and the minimum thickness of concrete masonry or concrete, or any combination thereof, covering the main reinforcing bars, as determined in accordance with Table 722.3.4, or by approved alternate methods.

TABLE 722.3.4—MINIMUM COVER OF LONGITUDINAL REINFORCEMENT IN FIRE-RESISTANCE-RATED REINFORCED CONCRETE MASONRY LINTELS (inches)

NOMINAL WIDTH OF LINTEL (inches)	FIRE-RESISTANCE RATING (hours)			
	1	2	3	4
6	$1^1/_2$	2	—	—
8	$1^1/_2$	$1^1/_2$	$1^3/_4$	3
10 or greater	$1^1/_2$	$1^1/_2$	$1^1/_2$	$1^3/_4$

For SI: 1 inch = 25.4 mm.

722.3.5 Concrete masonry columns. The fire-resistance rating of concrete masonry columns shall be determined based on the least plan dimension of the column in accordance with Table 722.3.5 or by approved alternate methods.

TABLE 722.3.5—MINIMUM DIMENSION OF CONCRETE MASONRY COLUMNS (inches)

FIRE-RESISTANCE RATING (hours)			
1	2	3	4
8 inches	10 inches	12 inches	14 inches

For SI: 1 inch = 25.4 mm.

722.4 Clay brick and tile masonry. The provisions of this section contain procedures by which the fire-resistance ratings of clay brick and tile masonry are established by calculations.

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722.4.1 Masonry walls. The fire-resistance rating of masonry walls shall be based on the equivalent thickness as calculated in accordance with this section. The calculation shall take into account finishes applied to the wall and airspaces between wythes in multiwythe construction.

TABLE 722.4.1(1)—FIRE-RESISTANCE PERIODS OF CLAY MASONRY WALLS

MATERIAL TYPE	MINIMUM REQUIRED EQUIVALENT THICKNESS FOR FIRE RESISTANCE[a, b, c] (inches)			
	1 hour	2 hours	3 hours	4 hours
Solid brick of clay or shale[d]	2.7	3.8	4.9	6.0
Hollow brick or tile of clay or shale, unfilled	2.3	3.4	4.3	5.0
Hollow brick or tile of clay or shale, grouted or filled with materials specified in Section 722.4.1.1.3	3.0	4.4	5.5	6.6

For SI: 1 inch = 25.4 mm.

a. Equivalent thickness as determined from Section 722.4.1.1.

b. Calculated fire resistance between the hourly increments specified shall be determined by linear interpolation.

c. Where combustible members are framed in the wall, the thickness of solid material between the end of each member and the opposite face of the wall, or between members set in from opposite sides, shall be not less than 93 percent of the thickness shown.

d. For units in which the net cross-sectional area of cored brick in any plane parallel to the surface containing the cores is not less than 75 percent of the gross cross-sectional area measured in the same plane.

TABLE 722.4.1(2)—FIRE-RESISTANCE RATINGS FOR BEARING STEEL FRAME BRICK VENEER WALLS OR PARTITIONS

WALL OR PARTITION ASSEMBLY	PLASTER SIDE EXPOSED (hours)	BRICK FACED SIDE EXPOSED (hours)
Outside facing of steel studs: $^1/_2$″ wood fiberboard sheathing next to studs, $^3/_4$″ airspace formed with $^3/_4$″ × 1$^5/_8$″ wood strips placed over the fiberboard and secured to the studs; metal or wire lath nailed to such strips, 3$^3/_4$″ brick *veneer* held in place by filling $^3/_4$″ airspace between the brick and lath with mortar. Inside facing of studs: $^3/_4$″ unsanded gypsum plaster on metal or wire lath attached to $^5/_{16}$″ wood strips secured to edges of the studs.	1.5	4
Outside facing of steel studs: 1″ insulation board sheathing attached to studs, 1″ airspace, and 3$^3/_4$″ brick veneer attached to steel frame with metal ties every 5th course. Inside facing of studs: $^7/_8$″ sanded gypsum plaster (1:2 mix) applied on metal or wire lath attached directly to the studs.	1.5	4
Same as previous assembly except use $^7/_8$″ vermiculite-gypsum plaster or 1″ sanded gypsum plaster (1:2 mix) applied to metal or wire.	2	4
Outside facing of steel studs: $^1/_2$″ gypsum sheathing board, attached to studs, and 3$^3/_4$″ brick veneer attached to steel frame with metal ties every 5th course. Inside facing of studs: $^1/_2$″ sanded gypsum plaster (1:2 mix) applied to $^1/_2$″ perforated gypsum lath securely attached to studs and having strips of metal lath 3 inches wide applied to all horizontal joints of gypsum lath.	2	4

For SI: 1 inch = 25.4 mm.

TABLE 722.4.1(3)—VALUES OF $R_n^{0.59}$

R_n 0.59	*R* (hours)
1	1.0
2	1.50
3	1.91
4	2.27

TABLE 722.4.1(4)—COEFFICIENTS FOR PLASTER, *pl*[a]

THICKNESS OF PLASTER (inch)	ONE SIDE	TWO SIDES
$^1/_2$	0.3	0.6
$^5/_8$	0.37	0.75
$^3/_4$	0.45	0.90

For SI: 1 inch = 25.4 mm.

a. Values specified in the table are for 1:3 sanded *gypsum plaster*.

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TABLE 722.4.1(5)—REINFORCED MASONRY LINTELS				
NOMINAL LINTEL WIDTH (inches)	MINIMUM LONGITUDINAL REINFORCEMENT COVER FOR FIRE RESISTANCE (inches)			
	1 hour	2 hours	3 hours	4 hours
6	$1^1/_2$	2	NP	NP
8	$1^1/_2$	$1^1/_2$	$1^3/_4$	3
10 or more	$1^1/_2$	$1^1/_2$	$1^1/_2$	$1^3/_4$
For SI: 1 inch = 25.4 mm. NP = Not Permitted.				

TABLE 722.4.1(6)—REINFORCED CLAY MASONRY COLUMNS				
COLUMN SIZE	FIRE-RESISTANCE RATING (hours)			
	1	2	3	4
Minimum column dimension (inches)	8	10	12	14
For SI: 1 inch = 25.4 mm.				

722.4.1.1 Equivalent thickness. The fire-resistance ratings of walls or partitions constructed of solid or hollow clay masonry units shall be determined from Table 722.4.1(1) or Table 722.4.1(2). The equivalent thickness of the clay masonry unit shall be determined by Equation 7-8 where using Table 722.4.1(1). The fire-resistance rating determined from Table 722.4.1(1) shall be permitted to be used in the calculated fire-resistance rating procedure in Section 722.4.2.

Equation 7-8 $T_e = V_n/LH$

where:

T_e = The equivalent thickness of the clay masonry unit (inches).

V_n = The net volume of the clay masonry unit (inch^3).

L = The specified length of the clay masonry unit (inches).

H = The specified height of the clay masonry unit (inches).

722.4.1.1.1 Hollow clay units. The equivalent thickness, T_e, shall be the value obtained for hollow clay units as determined in accordance with Equation 7-8. The net volume, V_n, of the units shall be determined using the gross volume and percentage of void area determined in accordance with ASTM C67.

722.4.1.1.2 Solid grouted clay units. The equivalent thickness of solid grouted clay masonry units shall be taken as the actual thickness of the units.

722.4.1.1.3 Units with filled cores. The equivalent thickness of the hollow clay masonry units is the actual thickness of the unit where completely filled with loose-fill materials of: sand, pea gravel, crushed stone, or slag that meet ASTM C33 requirements; pumice, scoria, expanded shale, expanded clay, expanded slate, expanded slag, expanded fly ash, or cinders in compliance with ASTM C331; or perlite or vermiculite meeting the requirements of ASTM C549 and ASTM C516, respectively.

722.4.1.2 Plaster finishes. Where plaster is applied to the wall, the total fire-resistance rating shall be determined by the formula:

Equation 7-9 $R = (R_n^{0.59} + pl)^{1.7}$

where:

R = The fire-resistance rating of the assembly (hours).

R_n = The fire-resistance rating of the individual wall (hours).

pl = Coefficient for thickness of plaster.

Values for $R_n^{0.59}$ for use in Equation 7-9 are given in Table 722.4.1(3). Coefficients for thickness of plaster shall be selected from Table 722.4.1(4) based on the actual thickness of plaster applied to the wall or partition and whether one or two sides of the wall are plastered.

722.4.1.3 Multiwythe walls with airspace. Where a continuous airspace separates multiple wythes of the wall or partition, the total fire-resistance rating shall be determined by the formula:

Equation 7-10 $R = (R_1^{0.59} + R_2^{0.59} + ... + R_n^{0.59} + as)^{1.7}$

where:

R = The fire-resistance rating of the assembly (hours).

R_1, R_2 and R_n = The fire-resistance rating of the individual wythes (hours).

as = Coefficient for continuous airspace.

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Values for $R_n^{0.59}$ for use in Equation 7-10 are given in Table 722.4.1(3). The coefficient for each continuous airspace of $^1/_2$ inch to $3^1/_2$ inches (12.7 to 89 mm) separating two individual wythes shall be 0.3.

722.4.1.4 Nonsymmetrical assemblies. For a wall without finish on one side or having different types or thicknesses of finish on each side, the calculation procedures of this section shall be performed twice, assuming either side to be the fire-exposed side of the wall. The fire resistance of the wall shall not exceed the lower of the two values determined.

Exception: For exterior walls with a fire separation distance greater than 5 feet (1524 mm), the fire shall be assumed to occur on the interior side only.

722.4.2 Multiwythe walls. The fire-resistance rating for walls or partitions consisting of two or more dissimilar wythes shall be permitted to be determined by the formula:

Equation 7-11 $$R = (R_1^{0.59} + R_2^{0.59} + \ldots + R_n^{0.59})^{1.7}$$

where:

R = The fire-resistance rating of the assembly (hours).

R_1, R_2 and R_n = The fire-resistance rating of the individual wythes (hours).

Values for $R_n^{0.59}$ for use in Equation 7-11 are given in Table 722.4.1(3).

722.4.2.1 Multiwythe walls of different material. For walls that consist of two or more wythes of different materials (concrete or concrete masonry units) in combination with clay masonry units, the fire-resistance rating of the different materials shall be permitted to be determined from Table 722.2.1.1 for concrete; Table 722.3.2 for concrete masonry units or Table 722.4.1(1) or Table 722.4.1(2) for clay and tile masonry units.

722.4.3 Reinforced clay masonry lintels. Fire-resistance ratings for clay masonry lintels shall be determined based on the nominal width of the lintel and the minimum covering for the longitudinal reinforcement in accordance with Table 722.4.1(5).

722.4.4 Reinforced clay masonry columns. The fire-resistance ratings shall be determined based on the last plan dimension of the column in accordance with Table 722.4.1(6). The minimum cover for longitudinal reinforcement shall be 2 inches (51 mm).

722.5 Steel assemblies. The provisions of this section contain procedures by which the fire-resistance ratings of steel assemblies are established by calculations.

722.5.1 Structural steel columns. The fire-resistance ratings of structural steel columns shall be based on the size of the element and the type of protection provided in accordance with this section.

TABLE 722.5.1(1)—W/D RATIOS FOR STEEL COLUMNS

STRUCTURAL SHAPE	CONTOUR PROFILE	BOX PROFILE
W14 × 233	2.55	3.65
× 211	2.32	3.35
× 193	2.14	3.09
× 176	1.96	2.85
× 159	1.78	2.60
× 145	1.64	2.39
× 132	1.56	2.25
× 120	1.42	2.06
× 109	1.29	1.88
× 99	1.18	1.72
× 90	1.08	1.58
× 82	1.23	1.68
× 74	1.12	1.53
× 68	1.04	1.41
× 61	0.928	1.28
× 53	0.915	1.21
× 48	0.835	1.10
× 43	0.752	0.99
W12 × 190	2.50	3.51
× 170	2.26	3.20
× 152	2.04	2.90
× 136	1.86	2.63

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TABLE 722.5.1(1)—W/D RATIOS FOR STEEL COLUMNS—continued		
STRUCTURAL SHAPE	CONTOUR PROFILE	BOX PROFILE
× 120	1.65	2.36
× 106	1.47	2.11
× 96	1.34	1.93
× 87	1.22	1.76
× 79	1.11	1.61
× 72	1.02	1.48
× 65	0.925	1.35
× 58	0.925	1.31
× 53	0.855	1.20
× 50	0.909	1.23
× 45	0.829	1.12
× 40	0.734	1.00
W10 × 112	1.81	2.57
× 100	1.64	2.33
× 88	1.45	2.08
× 77	1.28	1.85
× 68	1.15	1.66
× 60	1.01	1.48
× 54	0.922	1.34
× 49	0.84	1.23
× 45	0.888	1.24
× 39	0.78	1.09
× 33	0.661	0.93
W8 × 67	1.37	1.94
× 58	1.20	1.71
× 48	1.00	1.44
× 40	0.849	1.23
× 35	0.749	1.08
× 31	0.665	0.97
× 28	0.688	0.96
× 24	0.591	0.83
× 21	0.577	0.77
× 18	0.499	0.67
W6 ×25	0.696	1.00
× 20	0.563	0.82
× 16	0.584	0.78
× 15	0.431	0.63
× 12	0.448	0.60
× 9	0.338	0.46
W5 ×19	0.644	0.93
× 16	0.55	0.80
W4 ×13	0.556	0.79
For SI: 1 pound per linear foot per inch = 0.059 kg/m/mm.		

FIGURE 722.5.1(1)—DETERMINATION OF THE HEATED PERIMETER OF STRUCTURAL STEEL COLUMNS

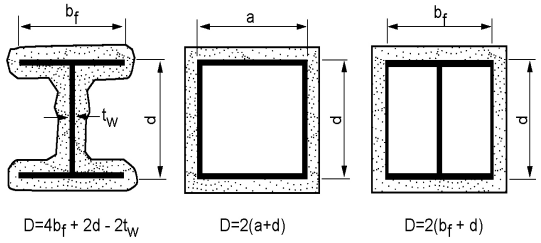
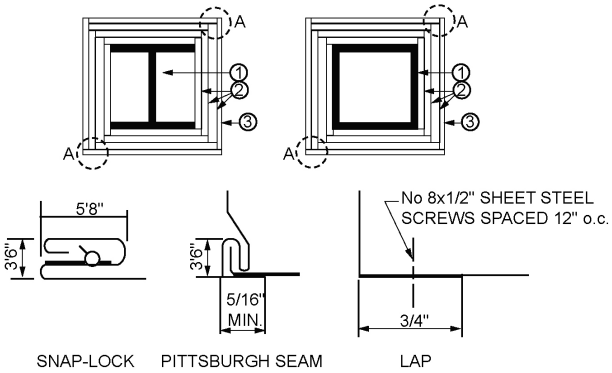


TABLE 722.5.1(2)—PROPERTIES OF CONCRETE		
PROPERTY	**NORMAL-WEIGHT CONCRETE**	**STRUCTURAL LIGHTWEIGHT CONCRETE**
Thermal conductivity (k_c)	0.95 Btu/hr × ft × °F	0.35 Btu/hr × ft × °F
Specific heat (c_c)	0.20 Btu/lb °F	0.20 Btu/lb °F
Density (P_c)	145 lb/ft^3	110 lb/ft^3
Equilibrium (free) moisture content (m) by volume	4%	5%
For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 lb/ft^3= 16.0185 kg/m^3, Btu/hr × ft × °F = 1.731 W/(m × K).		

FIGURE 722.5.1(2)—GYPSUM-PROTECTED STRUCTURAL STEEL COLUMNS WITH SHEET STEEL COLUMN COVERS



For SI:1 inch = 25.4 mm, 1 foot = 305 mm.

1. Structural steel column, either wide flange or tubular shapes.
2. Type X gypsum panel products in accordance with ASTM C1177, C1178, C1278, C1396 or C1658. The total thickness of gypsum panel products calculated as *h* in Section 722.5.1.2 shall be applied vertically to an individual column using one of the following methods:
   1. As a single layer without horizontal joints.
   2. As multiple layers with horizontal joints not permitted in any layer.
   3. As multiple layers with horizontal joints staggered not less than 12 inches vertically between layers and not less than 8 feet vertically in any single layer. The total required thickness of gypsum panel products shall be determined on the basis of the specified fire-resistance rating and the weight-to-heated-perimeter ratio (W/D) of the column. For fire-resistance ratings of 2 hours or less, one of the required layers of gypsum panel product shall be permitted to be applied to the exterior of the sheet steel column covers with 1-inch-long Type S screws spaced 1 inch from the wallboard edge and 8 inches on center. For such installations, 0.0149-inch minimum thickness galvanized steel corner beads with $1^1/_2$-inch legs shall be attached to the wallboard with Type S screws spaced 12 inches on center.
3. For fire-resistance ratings of 3 hours or less, the column covers shall be fabricated from 0.0239-inch minimum thickness galvanized or stainless steel. For 4-hour fire-resistance ratings, the column covers shall be fabricated from 0.0239-inch minimum thickness stainless steel. The column covers shall be erected with the Snap Lock or Pittsburgh joint details. For fire-resistance ratings of 2 hours or less, column covers fabricated from 0.0269-inch minimum thickness galvanized or stainless steel shall be permitted to be erected with lap joints. The lap joints shall be permitted to be located anywhere around the perimeter of the column cover. The lap joints shall be secured with $^1/_2$-inch-long No. 8 sheet metal screws spaced 12 inches on center. The column covers shall be provided with a minimum expansion clearance of $^1/_8$ inch per linear foot between the ends of the cover and any restraining construction.

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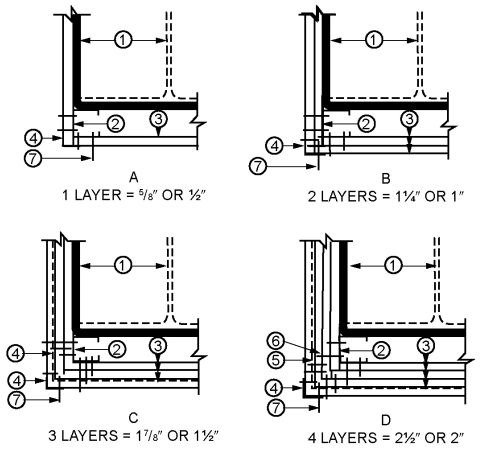
TABLE 722.5.1(3)—THERMAL CONDUCTIVITY OF CONCRETE OR CLAY MASONRY UNITS	
DENSITY (d_m) OF UNITS (lb/ft^3)	**THERMAL CONDUCTIVITY (K) OF UNITS (Btu/hr × ft × °F)**
Concrete Masonry Units	
80	0.207
85	0.228
90	0.252
95	0.278
100	0.308
105	0.340
110	0.376
115	0.416
120	0.459
125	0.508
130	0.561
135	0.620
140	0.685
145	0.758
150	0.837
Clay Masonry Units	
120	1.25
130	2.25
For SI:1 pound per cubic foot = 16.0185 kg/m^3, Btu/hr × ft × °F = 1.731 W/(m × K)	

FIGURE 722.5.1(3)—GYPSUM-PROTECTED STRUCTURAL STEEL COLUMNS WITH STEEL STUD/SCREW ATTACHMENT SYSTEM



For SI: 1 inch = 25.4 mm, 1 foot = 305 mm.

1. Structural steel column, either wide flange or tubular shapes.
2. $1^5/_8$-inch deep studs fabricated from 0.0179-inch minimum thickness galvanized steel with $1^5/_{16}$ or $1^7/_{16}$-inch legs. The length of the steel studs shall be $^1/_2$ inch less than the height of the assembly.
3. Type X gypsum panel products in accordance with ASTM C1177, C1178, C1278, C1396 or C1658. The total thickness of gypsum panel products calculated as h in Section 722.5.1.2 shall be applied vertically to an individual column using one of the following methods:
   1. As a single layer without horizontal joints.
   2. As multiple layers with horizontal joints not permitted in any layer.
   3. As multiple layers with horizontal joints staggered not less than 12 inches vertically between layers and not less than 8 feet vertically in any single layer. The total required thickness of gypsum panel products shall be determined on the basis of the specified fire-resistance rating and the weight-to-heated-perimeter ratio (W/D) of the column.
4. Galvanized 0.0149-inch minimum thickness steel corner beads with $1^1/_2$-inch legs attached to the gypsum panel products with 1-inch-long Type S screws spaced 12 inches on center.
5. No. 18 SWG steel tie wires spaced 24 inches on center.
6. Sheet metal angles with 2-inch legs fabricated from 0.0221-inch minimum thickness galvanized steel.
7. Type S screws, 1 inch long, shall be used for attaching the first layer of gypsum panel product to the steel studs and the third layer to the sheet metal angles at 24 inches on center. Type S screws $1^3/_4$ inches long shall be used for attaching the second layer of gypsum panel product to the steel studs and the fourth layer to the sheet metal angles at 12 inches on center. Type S screws $2^1/_4$ inches long shall be used for attaching the third layer of gypsum panel product to the steel studs at 12 inches on center.

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TABLE 722.5.1(4)—WEIGHT-TO-HEATED-PERIMETER RATIOS *(W/D)* FOR TYPICAL WIDE FLANGE BEAM AND GIRDER SHAPES		
STRUCTURAL SHAPE	**CONTOUR PROFILE**	**BOX PROFILE**
W36 × 300	2.50	3.33
× 280	2.35	3.12
× 260	2.18	2.92
× 245	2.08	2.76
× 230	1.95	2.61
× 210	1.96	2.45
× 194	1.81	2.28
× 182	1.72	2.15
× 170	1.60	2.01
× 160	1.51	1.90
× 150	1.43	1.79
× 135	1.29	1.63
W33 × 241	2.13	2.86
× 221	1.97	2.64
× 201	1.79	2.42
× 152	1.53	1.94
× 141	1.43	1.80
× 130	1.32	1.67
× 118	1.21	1.53
W30 × 211	2.01	2.74
× 191	1.85	2.50
× 173	1.66	2.28
× 132	1.47	1.85
× 124	1.39	1.75
× 116	1.30	1.65
× 108	1.21	1.54
× 99	1.12	1.42
W27 × 178	1.87	2.55
× 161	1.70	2.33
× 146	1.55	2.12
× 114	1.39	1.76
× 102	1.24	1.59
× 94	1.15	1.47
× 84	1.03	1.33
W24 × 162	1.88	2.57
× 146	1.70	2.34
× 131	1.54	2.12
× 117	1.38	1.91
× 104	1.24	1.71
× 94	1.28	1.63
× 84	1.15	1.47
× 76	1.05	1.34
W24 × 68	0.942	1.21
× 62	0.934	1.14
× 55	0.828	1.02

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TABLE 722.5.1(4)—WEIGHT-TO-HEATED-PERIMETER RATIOS *(W/D)* FOR TYPICAL WIDE FLANGE BEAM AND GIRDER SHAPES—continued		
STRUCTURAL SHAPE	**CONTOUR PROFILE**	**BOX PROFILE**
W21 × 147	1.87	2.60
× 132	1.68	2.35
× 122	1.57	2.19
× 111	1.43	2.01
× 101	1.30	1.84
× 93	1.40	1.80
× 83	1.26	1.62
× 73	1.11	1.44
× 68	1.04	1.35
W21 × 62	0.952	1.23
× 57	0.952	1.17
× 50	0.838	1.04
× 44	0.746	0.92
W18 × 119	1.72	2.42
× 106	1.55	2.18
× 97	1.42	2.01
× 86	1.27	1.80
× 76	1.13	1.60
× 71	1.22	1.59
× 65	1.13	1.47
× 60	1.04	1.36
× 55	0.963	1.26
× 50	0.88	1.15
× 46	0.878	1.09
× 40	0.768	0.96
× 35	0.672	0.85
W16 × 100	1.59	2.25
× 89	1.43	2.03
× 77	1.25	1.78
× 67	1.09	1.56
× 57	1.09	1.43
× 50	0.962	1.26
× 45	0.870	1.15
× 40	0.780	1.03
× 36	0.702	0.93
× 31	0.661	0.83
× 26	0.558	0.70
W14 × 132	1.89	3.00
× 120	1.71	2.75
× 109	1.57	2.52
W14 × 99	1.43	2.31
× 90	1.31	2.11
× 82	1.45	2.12
× 74	1.32	1.93
× 68	1.22	1.78

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TABLE 722.5.1(4)—WEIGHT-TO-HEATED-PERIMETER RATIOS *(W/D)* FOR TYPICAL WIDE FLANGE BEAM AND GIRDER SHAPES—continued

STRUCTURAL SHAPE	CONTOUR PROFILE	BOX PROFILE
× 61	1.10	1.61
× 53	1.06	1.48
× 48	0.970	1.35
W14 × 43	0.874	1.22
× 38	0.809	1.09
× 34	0.725	0.98
× 30	0.644	0.87
× 26	0.628	0.79
× 22	0.534	0.68
W12 × 87	1.47	2.34
× 79	1.34	2.14
× 72	1.23	1.97
× 65	1.11	1.79
× 58	1.10	1.69
× 53	1.02	1.55
× 50	1.06	1.54
× 45	0.974	1.40
× 40	0.860	1.25
× 35	0.810	1.11
× 30	0.699	0.96
× 26	0.612	0.84
× 22	0.623	0.77
× 19	0.540	0.67
× 16	0.457	0.57
× 14	0.405	0.50
W10 × 112	2.17	3.38
× 100	1.97	3.07
× 88	1.74	2.75
× 77	1.54	2.45
× 68	1.38	2.20
× 60	1.22	1.97
× 54	1.11	1.79
× 49	1.01	1.64
× 45	1.06	1.59
× 39	0.94	1.40
× 33	0.77	1.20
W10 × 30	0.806	1.12
× 26	0.708	0.98
× 22	0.606	0.84
× 19	0.607	0.78
× 17	0.543	0.70
× 15	0.484	0.63
× 12	0.392	0.51
W8 × 67	1.65	2.55
× 58	1.44	2.26

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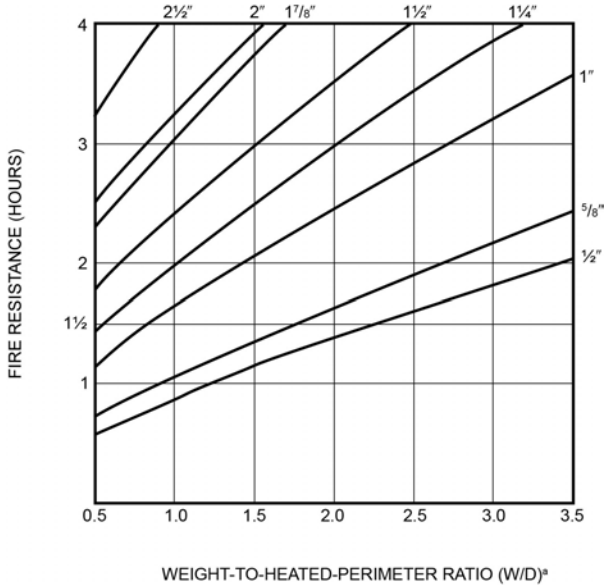
TABLE 722.5.1(4)—WEIGHT-TO-HEATED-PERIMETER RATIOS *(W/D)* FOR TYPICAL WIDE FLANGE BEAM AND GIRDER SHAPES—continued		
STRUCTURAL SHAPE	**CONTOUR PROFILE**	**BOX PROFILE**
× 48	1.21	1.91
× 40	1.03	1.63
× 35	0.907	1.44
× 31	0.803	1.29
× 28	0.819	1.24
× 24	0.704	1.07
× 21	0.675	0.96
× 18	0.583	0.84
× 15	0.551	0.74
× 13	0.483	0.65
× 10	0.375	0.51
W6 × 25	0.839	1.33
× 20	0.678	1.09
× 16	0.684	0.96
× 15	0.521	0.83
× 12	0.526	0.75
× 9	0.398	0.57
W5 × 19	0.776	1.24
× 16	0.664	1.07
W4 × 13	0.670	1.05
For SI: 1 pound per linear foot per inch = 0.059 kg/m/mm.		

FIGURE 722.5.1(4)—FIRE RESISTANCE OF STRUCTURAL STEEL COLUMNS PROTECTED WITH VARIOUS THICKNESSES OF TYPE X GYPSUM WALLBOARD



For SI:1 inch = 25.4 mm, 1 pound per linear foot/inch = 0.059 kg/m/mm.

a. The W/D ratios for typical wide flange columns are listed in Table 722.5.1(1). For other column shapes, the W/D ratios shall be determined in accordance with Section 722.5.1.1.

TABLE 722.5.1(5)—FIRE RESISTANCE OF CONCRETE MASONRY PROTECTED STEEL COLUMNS					
COLUMN SIZE	CONCRETE MASONRY DENSITY POUNDS PER CUBIC FOOT	MINIMUM REQUIRED EQUIVALENT THICKNESS FOR FIRE-RESISTANCE RATING OF CONCRETE MASONRY PROTECTION ASSEMBLY, T_e (inches)			
		1 hour	2 hours	3 hours	4 hours
W14 × 82	80	0.74	1.61	2.36	3.04
	100	0.89	1.85	2.67	3.40
	110	0.96	1.97	2.81	3.57
	120	1.03	2.08	2.95	3.73
W14 × 68	80	0.83	1.70	2.45	3.13
	100	0.99	1.95	2.76	3.49
	110	1.06	2.06	2.91	3.66
	120	1.14	2.18	3.05	3.82
W14 × 53	80	0.91	1.81	2.58	3.27
	100	1.07	2.05	2.88	3.62
	110	1.15	2.17	3.02	3.78
	120	1.22	2.28	3.16	3.94
W14 × 43	80	1.01	1.93	2.71	3.41
	100	1.17	2.17	3.00	3.74
	110	1.25	2.28	3.14	3.90
	120	1.32	2.38	3.27	4.05
W12 × 72	80	0.81	1.66	2.41	3.09
	100	0.91	1.88	2.70	3.43
	110	0.99	1.99	2.84	3.60
	120	1.06	2.10	2.98	3.76
W12 × 58	80	0.88	1.76	2.52	3.21
	100	1.04	2.01	2.83	3.56
	110	1.11	2.12	2.97	3.73
	120	1.19	2.23	3.11	3.89
W12 × 50	80	0.91	1.81	2.58	3.27
	100	1.07	2.05	2.88	3.62
	110	1.15	2.17	3.02	3.78
	120	1.22	2.28	3.16	3.94
W12 × 40	80	1.01	1.94	2.72	3.41
	100	1.17	2.17	3.01	3.75
	110	1.25	2.28	3.14	3.90
	120	1.32	2.39	3.27	4.06
W10 × 68	80	0.72	1.58	2.33	3.01
	100	0.87	1.83	2.65	3.38
	110	0.94	1.95	2.79	3.55
	120	1.01	2.06	2.94	3.72
W10 × 54	80	0.88	1.76	2.53	3.21
	100	1.04	2.01	2.83	3.57
	110	1.11	2.12	2.98	3.73
	120	1.19	2.24	3.12	3.90
W10 × 45	80	0.92	1.83	2.60	3.30
	100	1.08	2.07	2.90	3.64
	110	1.16	2.18	3.04	3.80
	120	1.23	2.29	3.18	3.96

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TABLE 722.5.1(5)—FIRE RESISTANCE OF CONCRETE MASONRY PROTECTED STEEL COLUMNS—continued

COLUMN SIZE	CONCRETE MASONRY DENSITY POUNDS PER CUBIC FOOT	MINIMUM REQUIRED EQUIVALENT THICKNESS FOR FIRE-RESISTANCE RATING OF CONCRETE MASONRY PROTECTION ASSEMBLY, T_e (inches)			
		1 hour	2 hours	3 hours	4 hours
W10 × 33	80	1.06	2.00	2.79	3.49
	100	1.22	2.23	3.07	3.80
	110	1.30	2.34	3.20	3.96
	120	1.37	2.44	3.33	4.12
W8 × 40	80	0.94	1.85	2.63	3.33
	100	1.10	2.10	2.93	3.67
	110	1.18	2.21	3.07	3.83
	120	1.25	2.32	3.20	3.99
W8 × 31	80	1.06	2.00	2.78	3.49
	100	1.22	2.23	3.07	3.81
	110	1.29	2.33	3.20	3.97
	120	1.36	2.44	3.33	4.12
W8 × 24	80	1.14	2.09	2.89	3.59
	100	1.29	2.31	3.16	3.90
	110	1.36	2.42	3.28	4.05
	120	1.43	2.52	3.41	4.20
W8 × 18	80	1.22	2.20	3.01	3.72
	100	1.36	2.40	3.25	4.01
	110	1.42	2.50	3.37	4.14
	120	1.48	2.59	3.49	4.28
8 × 8 × $^1/_2$ wall thickness	80	0.77	1.66	2.44	3.13
	100	0.92	1.91	2.75	3.49
	110	1.00	2.02	2.89	3.66
	120	1.07	2.14	3.03	3.82
8 × 8 × $^3/_8$ wall thickness	80	0.91	1.84	2.63	3.33
	100	1.07	2.08	2.92	3.67
	110	1.14	2.19	3.06	3.83
	120	1.21	2.29	3.19	3.98
8 × 8 × $^1/_4$ wall thickness	80	1.10	2.06	2.86	3.57
	100	1.25	2.28	3.13	3.87
	110	1.32	2.38	3.25	4.02
	120	1.39	2.48	3.38	4.17
6 × 6 × $^1/_2$ wall thickness	80	0.82	1.75	2.54	3.25
	100	0.98	1.99	2.84	3.59
	110	1.05	2.10	2.98	3.75
	120	1.12	2.21	3.11	3.91
6 × 6 × $^3/_8$ wall thickness	80	0.96	1.91	2.71	3.42
	100	1.12	2.14	3.00	3.75
	110	1.19	2.25	3.13	3.90
	120	1.26	2.35	3.26	4.05
6 × 6 × $^1/_4$ wall thickness	80	1.14	2.11	2.92	3.63
	100	1.29	2.32	3.18	3.93
	110	1.36	2.43	3.30	4.08
	120	1.42	2.52	3.43	4.22

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TABLE 722.5.1(5)—FIRE RESISTANCE OF CONCRETE MASONRY PROTECTED STEEL COLUMNS—continued					
COLUMN SIZE	CONCRETE MASONRY DENSITY POUNDS PER CUBIC FOOT	MINIMUM REQUIRED EQUIVALENT THICKNESS FOR FIRE-RESISTANCE RATING OF CONCRETE MASONRY PROTECTION ASSEMBLY, T_e (inches)			
		1 hour	2 hours	3 hours	4 hours
$4 \times 4 \times {}^{1}/_{2}$ wall thickness	80	0.93	1.90	2.71	3.43
	100	1.08	2.13	2.99	3.76
	110	1.16	2.24	3.13	3.91
	120	1.22	2.34	3.26	4.06
$4 \times 4 \times {}^{3}/_{8}$ wall thickness	80	1.05	2.03	2.84	3.57
	100	1.20	2.25	3.11	3.88
	110	1.27	2.35	3.24	4.02
	120	1.34	2.45	3.37	4.17
$4 \times 4 \times {}^{1}/_{4}$ wall thickness	80	1.21	2.20	3.01	3.73
	100	1.35	2.40	3.26	4.02
	110	1.41	2.50	3.38	4.16
	120	1.48	2.59	3.50	4.30
6 double extra strong 0.864 wall thickness	80	0.59	1.46	2.23	2.92
	100	0.73	1.71	2.54	3.29
	110	0.80	1.82	2.69	3.47
	120	0.86	1.93	2.83	3.63
6 extra strong 0.432 wall thickness	80	0.94	1.90	2.70	3.42
	100	1.10	2.13	2.98	3.74
	110	1.17	2.22	3.11	3.89
	120	1.24	2.34	3.24	4.04
6 standard 0.280 wall thickness	80	1.14	2.12	2.93	3.64
	100	1.29	2.33	3.19	3.94
	110	1.36	2.43	3.31	4.08
	120	1.42	2.53	3.43	4.22
5 double extra strong 0.750 wall thickness	80	0.70	1.61	2.40	3.12
	100	0.85	1.86	2.71	3.47
	110	0.91	1.97	2.85	3.63
	120	0.98	2.02	2.99	3.79
5 extra strong 0.375 wall thickness	80	1.04	2.01	2.83	3.54
	100	1.19	2.23	3.09	3.85
	110	1.26	2.34	3.22	4.00
	20	1.32	2.44	3.34	4.14
5 standard 0.258 wall thickness	80	1.20	2.19	3.00	3.72
	100	1.34	2.39	3.25	4.00
	110	1.41	2.49	3.37	4.14
	120	1.47	2.58	3.49	4.28
4 double extra strong 0.674 wall thickness	80	0.80	1.75	2.56	3.28
	100	0.95	1.99	2.85	3.62
	110	1.02	2.10	2.99	3.78
	120	1.09	2.20	3.12	3.93
4 extra strong 0.337 wall thickness	80	1.12	2.11	2.93	3.65
	100	1.26	2.32	3.19	3.95
	110	1.33	2.42	3.31	4.09
	120	1.40	2.52	3.43	4.23

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TABLE 722.5.1(5)—FIRE RESISTANCE OF CONCRETE MASONRY PROTECTED STEEL COLUMNS—continued					
COLUMN SIZE	CONCRETE MASONRY DENSITY POUNDS PER CUBIC FOOT	MINIMUM REQUIRED EQUIVALENT THICKNESS FOR FIRE-RESISTANCE RATING OF CONCRETE MASONRY PROTECTION ASSEMBLY, T_e (inches)			
		1 hour	2 hours	3 hours	4 hours
4 standard 0.237 wall thickness	80	1.26	2.25	3.07	3.79
	100	1.40	2.45	3.31	4.07
	110	1.46	2.55	3.43	4.21
	120	1.53	2.64	3.54	4.34
For SI: 1 inch = 25.4 mm, 1 pound per cubic feet = 16.02 kg/m^3. **Note:** Tabulated values assume 1-inch air gap between *masonry* and steel section.					

FIGURE 722.5.1(5)—WIDE FLANGE STRUCTURAL STEEL COLUMNS WITH SPRAYED FIRE-RESISTIVE MATERIALS

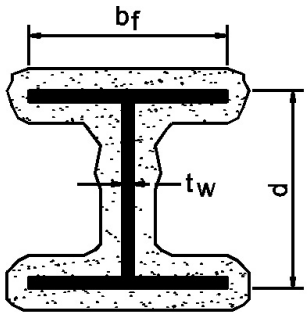

TABLE 722.5.1(6)—FIRE RESISTANCE OF CLAY MASONRY PROTECTED STEEL COLUMNS											
COLUMN SIZE	CLAY MASONRY DENSITY, POUNDS PER CUBIC FOOT	MINIMUM REQUIRED EQUIVALENT THICKNESS FOR FIRE-RESISTANCE RATING OF CLAY MASONRY PROTECTION ASSEMBLY, T_e (inches)				COLUMN SIZE	CLAY MASONRY DENSITY, POUNDS PER CUBIC FOOT	MINIMUM REQUIRED EQUIVALENT THICKNESS FOR FIRE-RESISTANCE RATING OF CLAY MASONRY PROTECTION ASSEMBLY, T_e (inches)			
		1 hour	2 hours	3 hours	4 hours			1 hour	2 hours	3 hours	4 hours
W14 × 82	120	1.23	2.42	3.41	4.29	W10 × 68	120	1.27	2.46	3.26	4.35
	130	1.40	2.70	3.78	4.74		130	1.44	2.75	3.83	4.80
W14 × 68	120	1.34	2.54	3.54	4.43	W10 × 54	120	1.40	2.61	3.62	4.51
	130	1.51	2.82	3.91	4.87		130	1.58	2.89	3.98	4.95
W14 × 53	120	1.43	2.65	3.65	4.54	W10 × 45	120	1.44	2.66	3.67	4.57
	130	1.61	2.93	4.02	4.98		130	1.62	2.95	4.04	5.01
W14 × 43	120	1.54	2.76	3.77	4.66	W10 × 33	120	1.59	2.82	3.84	4.73
	130	1.72	3.04	4.13	5.09		130	1.77	3.10	4.20	5.13
W12 × 72	120	1.32	2.52	3.51	4.40	W8 × 40	120	1.47	2.70	3.71	4.61
	130	1.50	2.80	3.88	4.84		130	1.65	2.98	4.08	5.04
W12 × 58	120	1.40	2.61	3.61	4.50	W8 × 31	120	1.59	2.82	3.84	4.73
	130	1.57	2.89	3.98	4.94		130	1.77	3.10	4.20	5.17
W12 × 50	120	1.43	2.65	3.66	4.55	W8 × 24	120	1.66	2.90	3.92	4.82
	130	1.61	2.93	4.02	4.99		130	1.84	3.18	4.28	5.25
W12 × 40	120	1.54	2.77	3.78	4.67	W8 × 18	120	1.75	3.00	4.01	4.91
	130	1.72	3.05	4.14	5.10		130	1.93	3.27	4.37	5.34

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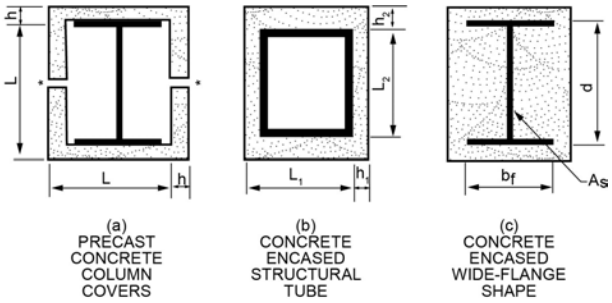
TABLE 722.5.1(6)—FIRE RESISTANCE OF CLAY MASONRY PROTECTED STEEL COLUMNS—continued

STEEL TUBING						STEEL PIPE					
NOMINAL TUBE SIZE (inches)	CLAY MASONRY DENSITY, POUNDS PER CUBIC FOOT	MINIMUM REQUIRED EQUIVALENT THICKNESS FOR FIRE-RESISTANCE RATING OF CLAY MASONRY PROTECTION ASSEMBLY, T_e (inches)				NOMINAL PIPE SIZE (inches)	CLAY MASONRY DENSITY, POUNDS PER CUBIC FOOT	MINIMUM REQUIRED EQUIVALENT THICKNESS FOR FIRE-RESISTANCE RATING OF CLAY MASONRY PROTECTION ASSEMBLY, T_e (inches)			
		1 hour	2 hours	3 hours	4 hours			1 hour	2 hours	3 hours	4 hours
4 × 4 × 1/2 wall thickness	120	1.44	2.72	3.76	4.68	4 double extra strong 0.674 wall thickness	120	1.26	2.55	3.60	4.52
	130	1.62	3.00	4.12	5.11		130	1.42	2.82	3.96	4.95
4 × 4 × 3/8 wall thickness	120	1.56	2.84	3.88	4.78	4 extra strong 0.337 wall thickness	120	1.60	2.89	3.92	4.83
	130	1.74	3.12	4.23	5.21		130	1.77	3.16	4.28	5.25
4 × 4 × 1/4 wall thickness	120	1.72	2.99	4.02	4.92	4 standard 0.237 wall thickness	120	1.74	3.02	4.05	4.95
	130	1.89	3.26	4.37	5.34		130	1.92	3.29	4.40	5.37
6 × 6 × 1/2 wall thickness	120	1.33	2.58	3.62	4.52	5 double extra strong 0.750 wall thickness	120	1.17	2.44	3.48	4.40
	130	1.50	2.86	3.98	4.96		130	1.33	2.72	3.84	4.83
6 × 6 × 3/8 wall thickness	120	1.48	2.74	3.76	4.67	5 extra strong 0.375 wall thickness	120	1.55	2.82	3.85	4.76
	130	1.65	3.01	4.13	5.10		130	1.72	3.09	4.21	5.18
6 × 6 × 1/4 wall thickness	120	1.66	2.91	3.94	4.84	5 standard 0.258 wall thickness	120	1.71	2.97	4.00	4.90
	130	1.83	3.19	4.30	5.27		130	1.88	3.24	4.35	5.32
8 × 8 × 1/2 wall thickness	120	1.27	2.50	3.52	4.42	6 double extra strong 0.864 wall thickness	120	1.04	2.28	3.32	4.23
	130	1.44	2.78	3.89	4.86		130	1.19	2.60	3.68	4.67
8 × 8 × 3/8 wall thickness	120	1.43	2.67	3.69	4.59	6 extra strong 0.432 wall thickness	120	1.45	2.71	3.75	4.65
	130	1.60	2.95	4.05	5.02		130	1.62	2.99	4.10	5.08
8 × 8 × 1/4 wall thickness	120	1.62	2.87	3.89	4.78	6 standard 0.280 wall thickness	120	1.65	2.91	3.94	4.84
	130	1.79	3.14	4.24	5.21		130	1.82	3.19	4.30	5.27

For SI: 1 inch = 25.4 mm, 1 pound per cubic foot = 16.02 kg/m^3.

FIGURE 722.5.1(6)—CONCRETE PROTECTED STRUCTURAL STEEL COLUMNS [a, b]



a. Where the inside perimeter of the concrete protection is not square, L shall be taken as the average of L_1 and L_2. Where the thickness of concrete cover is not constant, h shall be taken of the average of h_1 and h_2.

b. Joints shall be protected with not less than a 1-inch thickness of ceramic fiber blanket but in no case less than one-half the thickness of the column cover (see Section 722.2.1.3).

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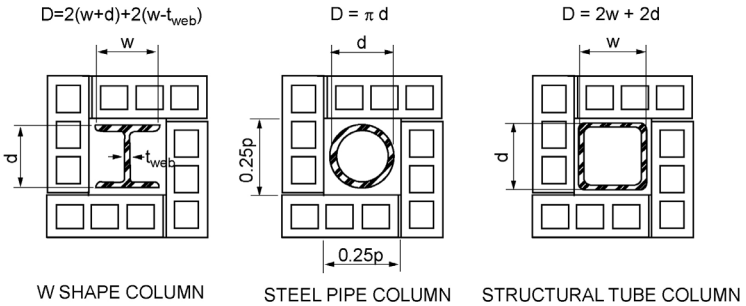
TABLE 722.5.1(7)—MINIMUM COVER (inch) FOR STEEL COLUMNS ENCASED IN NORMAL-WEIGHT CONCRETE[a] [FIGURE 722.5.1(6)(c)]

STRUCTURAL SHAPE	FIRE-RESISTANCE RATING (hours)				
	1	1 1/2	2	3	4
W14 × 233	1	1	1	1 1/2	2
× 176					2 1/2
× 132				2	
× 90			1 1/2		
× 61					3
× 48		1 1/2		2 1/2	
× 43					
W12 × 152	1	1	1	2	2 1/2
× 96					
× 65		1 1/2	1 1/2		3
× 50				2 1/2	
× 40					
W10 × 88	1	1 1/2	1 1/2	2	3
× 49	1			2 1/2	
× 45					
× 39					3 1/2
× 33			2		
W8 × 67	1	1	1 1/2	2 1/2	3
× 58					
× 48		1 1/2	2	3	3 1/2
× 31					
× 21					
× l8					4
W6 × 25	1	1 1/2	2	3	3 1/2
× 20		2	2 1/2		4
× 16				3 1/2	
× 15	1 1/2				
× 9					

For SI: 1 inch = 25.4 mm.

a. The tabulated thicknesses are based on the assumed properties of normal-weight concrete given in Table 722.5.1(2).

FIGURE 722.5.1(7)—CONCRETE OR CLAY MASONRY PROTECTED STRUCTURAL STEEL COLUMNS



For SI: 1 inch = 25.4 mm.

d = Depth of a wide flange column, outside diameter of pipe column, or outside dimension of structural tubing column (inches).

t_{web} = Thickness of web of wide flange column (inches).

w = Width of flange of wide-flange column (inches).

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TABLE 722.5.1(8)—MINIMUM COVER (inch) FOR STEEL COLUMNS ENCASED IN STRUCTURAL LIGHTWEIGHT CONCRETE[a] [FIGURE 722.5.1(6)(c)]

STRUCTURAL SHAPE	FIRE-RESISTANCE RATING (HOURS)				
	1	1 1/2	2	3	4
W14 × 233		1	1	1	1 1/2
× 193				1 1/2	
× 74					2
× 61					2 1/2
× 43			1 1/2	2	
W12 × 65	1	1	1	1 1/2	2
× 53				2	2 1/2
× 40			1 1/2		
W10 × 112	1	1	1	1 1/2	2
× 88					
× 60				2	2 1/2
× 33			1 1/2		
W8 × 35	1	1	1 1/2	2	2 1/2
× 28					3
× 24				2 1/2	
× 18		1 1/2			

For SI: 1 inch = 25.4 mm.

a. The tabulated thicknesses are based on the assumed properties of structural lightweight concrete given in Table 722.5.1(2).

TABLE 722.5.1(9)—MINIMUM COVER (inch) FOR STEEL COLUMNS IN NORMAL-WEIGHT PRECAST COVERS[a] [FIGURE 722.5.1 (6)(a)]

STRUCTURAL SHAPE	FIRE-RESISTANCE RATING (hours)				
	1	1 1/2	2	3	4
W14 × 233	1 1/2	1 1/2	1 1/2	2 1/2	3
× 211					3 1/2
× 176			2		
× 145				3	
× 109		2	2 1/2		4
× 99					
× 61				3 1/2	
× 43					4 1/2
W12 × 190	1 1/2	1 1/2	1 1/2	2 1/2	3 1/2
× 152			2		
× 120				3	4
× 96					
× 87		2	2 1/2	3 1/2	
× 58					4 1/2
× 40					
W10 × 112	1 1/2	1 1/2	2	3	3 1/2
× 88					4
× 77		2	2 1/2		
× 54				3 1/2	
× 33					4 1/2

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TABLE 722.5.1(9)—MINIMUM COVER (inch) FOR STEEL COLUMNS IN NORMAL-WEIGHT PRECAST COVERS[a] [FIGURE 722.5.1 (6)(a)]—continued

STRUCTURAL SHAPE	FIRE-RESISTANCE RATING (hours)				
	1	1 1/2	2	3	4
W8 × 67	1 1/2	1 1/2	2	3	4
× 58		2	2 1/2	3 1/2	
× 48					
× 28					4 1/2
× 21		2 1/2	3		
× 18				4	
W6 × 25	1 1/2	2	2 1/2	3 1/2	4 1/2
× 20		2 1/2	3		
× 16				4	
× 12	2				
× 9					5

For SI: 1 inch = 25.4 mm.

a. The tabulated thicknesses are based on the assumed properties of normal-weight concrete given in Table 722.5.1(2).

TABLE 722.5.1(10)—MINIMUM COVER (inch) FOR STEEL COLUMNS IN STRUCTURAL LIGHTWEIGHT PRECAST COVERS[a] [FIGURE 722.5.1 (6)(a)]

STRUCTURAL SHAPE	FIRE-RESISTANCE RATING (hours)				
	1	1 1/2	2	3	4
W14 × 233	1 1/2	1 1/2	1 1/2	2	2 1/2
× 176				2 1/2	3
× 145					
× 132					
× 109					
× 99			2		
× 68					3 1/2
× 43				3	
W12 × 190	1 1/2	1 1/2	1 1/2	2	2 1/2
× 152					
× 136					3
× 106				2 1/2	
× 96					
× 87					3 1/2
× 65			2		
× 40				3	
W10 × 112	1 1/2	1 1/2	1 1/2	2	3
× 100				2 1/2	
× 88					
× 77			2		3 1/2
× 60					
× 39				3	
× 33		2			

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TABLE 722.5.1(10)—MINIMUM COVER (inch) FOR STEEL COLUMNS IN STRUCTURAL LIGHTWEIGHT PRECAST COVERS[a] [FIGURE 722.5.1 (6)(a)]—continued

STRUCTURAL SHAPE	FIRE-RESISTANCE RATING (hours)				
	1	1 1/2	2	3	4
W8 × 67	1 1/2	1 1/2	1 1/2	2 1/2	3
× 48			2	3	3 1/2
× 35					
× 28		2			
× 18			2 1/2		4
W6 × 25	1 1/2	2	2	3	3 1/2
× 15			2 1/2		4
× 9				3 1/2	

For SI: 1 inch = 25.4 mm.

a. The tabulated thicknesses are based on the assumed properties of structural lightweight concrete given in Table 722.5.1(2).

722.5.1.1 General. These procedures establish a basis for determining the fire resistance of column assemblies as a function of the thickness of fire-resistant material and, the weight, W, and heated perimeter, D, of structural steel columns. As used in these sections, W is the average weight of a structural steel column in pounds per linear foot. The heated perimeter, D, is the inside perimeter of the fire-resistive material in inches as illustrated in Figure 722.5.1(1).

722.5.1.1.1 Nonload-bearing protection. The application of these procedures shall be limited to column assemblies in which the fire-resistant material is not designed to carry any of the load acting on the column.

722.5.1.1.2 Embedments. In the absence of substantiating fire-endurance test results, ducts, conduit, piping, and similar mechanical, electrical, and plumbing installations shall not be embedded in any required fire-resistant materials.

722.5.1.1.3 Weight-to-perimeter ratio. Table 722.5.1(1) contains weight-to-heated-perimeter ratios (*W/D*) for both contour and box fire-resistant profiles, for the wide flange shapes most often used as columns. For different fire-resistant protection profiles or column cross sections, the weight-to-heated-perimeter ratios (*W/D*) shall be determined in accordance with the definitions given in this section.

722.5.1.2 Gypsum wallboard protection. The fire resistance of structural steel columns with weight-to-heated-perimeter ratios (*W/D*) less than or equal to 3.65 and that are protected with Type X gypsum wallboard shall be permitted to be determined from the following expression:

Equation 7-12 $$R = 130\left[\frac{h(W'/D)}{2}\right]^{0.75}$$

where:

R = Fire resistance (minutes).

h = Total thickness of gypsum wallboard (inches).

D = Heated perimeter of the structural steel column (inches).

W' = Total weight of the structural steel column and gypsum wallboard protection (pounds per linear foot).

$W' = W + 50hD/144$.

722.5.1.2.1 Attachment. The gypsum panel products shall be supported as illustrated in either Figure 722.5.1(2) for fire-resistance ratings of 4 hours or less, or Figure 722.5.1(3) for fire-resistance ratings of 3 hours or less.

722.5.1.2.2 Gypsum wallboard equivalent to concrete. The determination of the fire resistance of structural steel columns from Figure 722.5.1(4) is permitted for various thicknesses of gypsum wallboard as a function of the weight-to-heated-perimeter ratio (*W/D*) of the column. For structural steel columns with weight-to-heated-perimeter ratios (*W/D*) greater than 3.65, the thickness of gypsum wallboard required for specified fire-resistance ratings shall be the same as the thickness determined for a W14 × 233 wide flange shape.

722.5.1.3 Sprayed fire-resistive materials (SFRM). The fire resistance of wide-flange structural steel columns protected with sprayed fire-resistive materials (SFRM), as illustrated in Figure 722.5.1(5), shall be permitted to be determined from the following expression:

Equation 7-13 $$R = [C_1(W/D) + C_2]h$$

where:

R = Fire resistance (minutes).

h = Thickness of *SFRM* (inches).

D = Heated perimeter of the structural steel column (inches).

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C_1 and C_2 = Material-dependent constants.

W = Weight of structural steel columns (pounds per linear foot).

The fire resistance of structural steel columns protected with intumescent fire-resistive materials shall be determined on the basis of fire-resistance tests in accordance with Section 703.2.

722.5.1.3.1 Material-dependent constants. The material-dependent constants, C_1 and C_2, shall be determined for specific fire-resistant materials on the basis of standard fire endurance tests in accordance with Section 703.2. Unless evidence is submitted to the building official substantiating a broader application, this expression shall be limited to determining the fire resistance of structural steel columns with weight-to-heated-perimeter ratios (W/D) between the largest and smallest columns for which standard fire-resistance test results are available.

722.5.1.3.2 Identification. Sprayed fire-resistive materials shall be identified by density and thickness required for a given fire-resistance rating.

722.5.1.4 Concrete-protected columns. The fire resistance of structural steel columns protected with concrete, as illustrated in Figure 722.5.1(6) illustrations (a) and (b), shall be permitted to be determined from the following expression:

Equation 7-14 $R = R_o(1 + 0.03m)$

where:

$R_o = 10\ (W/D)^{0.7} + 17\ (h^{1.6}/k_c^{0.2}) \times [1 + 26\ \{H/p_c c_c h\ (L + h)\}^{0.8}]$

As used in these expressions:

R = Fire endurance at equilibrium moisture conditions (minutes).

R_o = Fire endurance at zero moisture content (minutes).

m = Equilibrium moisture content of the concrete by volume (percent).

W = Average weight of the structural steel column (pounds per linear foot).

D = Heated perimeter of the structural steel column (inches).

h = Thickness of the concrete cover (inches).

k_c = Ambient temperature thermal conductivity of the concrete (Btu/hr ft °F).

H = Ambient temperature thermal capacity of the steel column = 0.11W (Btu/ ft °F).

p_c = Concrete density (pounds per cubic foot).

c_c = Ambient temperature specific heat of concrete (Btu/lb °F).

L = Interior dimension of one side of a square concrete box protection (inches).

722.5.1.4.1 Reentrant space filled. For wide-flange structural steel columns completely encased in concrete with all reentrant spaces filled Figure 722.5.1(6), illustration (c), the thermal capacity of the concrete within the reentrant spaces shall be permitted to be added to the thermal capacity of the steel column, as follows:

Equation 7-15 $H = 0.11\ W + (p_c c_c/144)\ (b_f d - A_s)$

where:

b_f = Flange width of the structural steel column (inches).

d = Depth of the structural steel column (inches).

A_s = Cross-sectional area of the steel column (square inches).

722.5.1.4.2 Concrete properties unknown. If specific data on the properties of concrete are not available, the values given in Table 722.5.1(2) are permitted.

722.5.1.4.3 Minimum concrete cover. For structural steel column encased in concrete with all reentrant spaces filled, Figure 722.5.1(6), illustration (c) and Tables 722.5.1(7) and 722.5.1(8) indicate the thickness of concrete cover required for various fire-resistance ratings for typical wide-flange sections. The thicknesses of concrete indicated in these tables apply to structural steel columns larger than those specified.

722.5.1.4.4 Minimum precast concrete cover. For structural steel columns protected with precast concrete column covers as shown in Figure 722.5.1(6), illustration (a), Tables 722.5.1(9) and 722.5.1(10) indicate the thickness of the column covers required for various fire-resistance ratings for typical wide-flange shapes. The thicknesses of concrete given in these tables apply to structural steel columns larger than those specified.

722.5.1.4.5 Masonry protection. The fire resistance of structural steel columns protected with concrete masonry units or clay masonry units as illustrated in Figure 722.5.1(7) shall be permitted to be determined from the following expression:

Equation 7-16 $R = 0.17\ (W/D)^{0.7} + [0.285\ (T_e^{1.6}/K^{0.2})]\ [1.0 + 42.7\ \{(A_s/d_m\ T_e)/(0.25p + T_e)\}^{0.8}]$

where:

R = Fire-resistance rating of column assembly (hours).

W = Average weight of structural steel column (pounds per foot).

D = Heated perimeter of structural steel column (inches) [see Figure 722.5.1(7)].

T_e = Equivalent thickness of concrete or clay masonry unit (inches) (see Table 722.3.2, Note a or Section 722.4.1).

K = Thermal conductivity of concrete or clay masonry unit (Btu/hr × ft × °F) [see Table 722.5.1(3)].

A_s = Cross-sectional area of structural steel column (square inches).

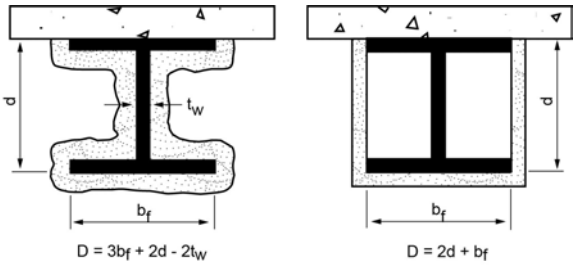
d_m = Density of the concrete or clay masonry unit (pounds per cubic foot).

p = Inner perimeter of concrete or clay masonry protection (inches) [see Figure 722.5.1(7)].

722.5.1.4.6 Equivalent concrete masonry thickness. For structural steel columns protected with concrete masonry, Table 722.5.1(5) gives the equivalent thickness of concrete masonry required for various fire-resistance ratings for typical column shapes. For structural steel columns protected with clay masonry, Table 722.5.1(6) gives the equivalent thickness of concrete masonry required for various fire-resistance ratings for typical column shapes.

722.5.2 Structural steel beams and girders. The fire-resistance ratings of structural steel beams and girders shall be based on the size of the element and the type of protection provided in accordance with this section.

FIGURE 722.5.2—DETERMINATION OF THE HEATED PERIMETER OF STRUCTURAL STEEL BEAMS AND GIRDERS



722.5.2.1 Determination of fire resistance. These procedures establish a basis for determining resistance of structural steel beams and girders that differ in size from that specified in approved fire-resistance-rated assemblies as a function of the thickness of fire-resistant material and the weight *(W)* and heated perimeter *(D)* of the beam or girder. As used in these sections, *W* is the average weight of a structural steel element in pounds per linear foot (plf). The heated perimeter, *D*, is the inside perimeter of the fire-resistant material in inches as illustrated in Figure 722.5.2.

722.5.2.1.1 Weight-to-heated perimeter. The weight-to-heated-perimeter ratios *(W/D)*, for both contour and box fire-resistant protection profiles, for the wide flange shapes most often used as beams or girders are given in Table 722.5.1(4). For different shapes, the weight-to-heated-perimeter ratios *(W/D)* shall be determined in accordance with the definitions given in this section.

722.5.2.1.2 Beam and girder substitutions. Except as provided for in Section 722.5.2.2, structural steel beams in approved fire-resistance-rated assemblies shall be considered to be the minimum permissible size. Other beam or girder shapes shall be permitted to be substituted provided that the weight-to-heated-perimeter ratio *(W/D)* of the substitute beam is equal to or greater than that of the beam specified in the approved assembly.

722.5.2.2 Sprayed fire-resistive materials (SFRM). The provisions in this section apply to structural steel beams and girders protected with sprayed fire-resistive materials (*SFRM*). Larger or smaller beam and girder shapes shall be permitted to be substituted for beams specified in approved unrestrained or restrained fire-resistance-rated assemblies, provided that the thickness of the *SFRM* is adjusted in accordance with the following expression:

Equation 7-17 $h_2 = h_1 [(W_1 / D_1) + 0.60] / [(W_2 / D_2) + 0.60]$

where:

h = Thickness of *SFRM* in inches.

W = Weight of the structural steel beam or girder in pounds per linear foot.

D = Heated perimeter of the structural steel beam in inches.

Subscript 1 refers to the beam and *SFRM* thickness in the approved assembly.

Subscript 2 refers to the substitute beam or girder and the required thickness of *SFRM*.

The fire resistance of structural steel beams and girders protected with intumescent fire-resistive materials shall be determined on the basis of fire-resistance tests in accordance with Section 703.2.

722.5.2.2.1 Minimum thickness. The use of Equation 7-17 is subject to the following conditions:

1. The weight-to-heated-perimeter ratio for the substitute beam or girder (W_2/D_2) shall be not less than 0.37.
2. The thickness of fire protection materials calculated for the substitute beam or girder (T_1) shall be not less than $^3/_8$ inch (9.5 mm).
3. The unrestrained or restrained beam rating shall be not less than 1 hour.
4. Where used to adjust the material thickness for a restrained beam, the use of this procedure is limited to structural steel sections classified as compact in accordance with AISC 360.

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722.5.2.3 Structural steel trusses. The fire resistance of structural steel trusses protected with fire-resistant materials sprayed to each of the individual truss elements shall be permitted to be determined in accordance with this section. The thickness of the fire-resistant material shall be determined in accordance with Section 722.5.1.3. The weight-to-heated-perimeter ratio (*W/D*) of truss elements that can be simultaneously exposed to fire on all sides shall be determined on the same basis as columns, as specified in Section 722.5.1.1. The weight-to-heated-perimeter ratio (*W/D*) of truss elements that directly support floor or roof assembly shall be determined on the same basis as beams and girders, as specified in Section 722.5.2.1.

The fire resistance of structural steel trusses protected with intumescent fire-resistive materials shall be determined on the basis of fire resistance tests in accordance with Section 703.2.

722.6 Wood assemblies. The provisions of this section contain procedures by which the fire-resistance ratings of wood assemblies are established by calculations.

722.6.1 General. This section contains procedures for calculating the fire-resistance ratings of walls, floor/ceiling and roof/ceiling assemblies based in part on the standard method of testing referenced in Section 703.2.

722.6.1.1 Maximum fire-resistance rating. Fire-resistance ratings calculated for assemblies using the methods in Section 722.6 shall be limited to not more than 1 hour.

722.6.1.2 Dissimilar membranes. Where dissimilar membranes are used on a wall assembly that requires consideration of fire exposure from both sides, the calculation shall be made from the least fire-resistant (weaker) side.

722.6.2 Walls, floors and roofs. These procedures apply to both load-bearing and nonload-bearing assemblies.

TABLE 722.6.2(1)—TIME ASSIGNED TO WALLBOARD MEMBRANES ON WOOD FRAME[a, b, c, d]

DESCRIPTION OF FINISH	TIME[e] (minutes)
$^3/_8$-inch wood structural panel bonded with exterior glue	5
$^{15}/_{32}$-inch wood structural panel bonded with exterior glue	10
$^{19}/_{32}$-inch wood structural panel bonded with exterior glue	15
$^3/_8$-inch gypsum wallboard	10
$^1/_2$-inch gypsum wallboard	15
$^5/_8$-inch gypsum wallboard	30
$^1/_2$-inch Type X gypsum wallboard	25
$^5/_8$-inch Type X gypsum wallboard	40
Double $^3/_8$-inch gypsum wallboard	25
$^1/_2$-inch + $^3/_8$-inch gypsum wallboard	35
Double $^1/_2$-inch gypsum wallboard	40

For SI: 1 inch = 25.4 mm.

a. These values apply only where membranes are installed on framing members that are spaced 16 inches o.c. or less.

b. Gypsum wallboard installed over framing or furring shall be installed so that all edges are supported, except $^5/_8$-inch Type X gypsum wallboard shall be permitted to be installed horizontally with the horizontal joints staggered 24 inches each side and unsupported but finished.

c. On wood frame floor/ceiling or roof/ceiling assemblies, gypsum board shall be installed with the long dimension perpendicular to framing members and shall have all joints finished.

d. The membrane on the unexposed side shall not be included in determining the fire resistance of the assembly. Where dissimilar membranes are used on a wall assembly, the calculation shall be made from the least fire-resistant (weaker) side.

e. The time assigned is not a finished rating.

TABLE 722.6.2(2)—TIME ASSIGNED FOR CONTRIBUTION OF WOOD FRAME[a, b, c]

DESCRIPTION	TIME ASSIGNED TO FRAME (minutes)
Wood studs 16 inches o.c.	20
Wood floor and roof joists 16 inches o.c.	10

For SI: 1 inch = 25.4 mm.

a. This table does not apply to studs or joists spaced more than 16 inches o.c.

b. All studs shall be nominal 2 × 4 and all joists shall have a nominal thickness of not less than 2 inches.

c. Allowable spans for joists shall be determined in accordance with Sections 2308.8.2.1, 2308.11.1 and 2308.11.2.

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TABLE 722.6.2(3)—MEMBRANE[a] ON EXTERIOR FACE OF WOOD STUD WALLS		
SHEATHING	**PAPER**	**EXTERIOR FINISH**
$^5/_8$-inch T & G lumber $^5/_{16}$-inch exterior glue wood structural panel $^1/_2$-inch gypsum wallboard $^5/_8$-inch gypsum wallboard $^1/_2$-inch fiberboard	Sheathing paper	Lumber siding Wood shingles and shakes $^1/_4$-inch fiber-cement lap, panel or shingle siding $^1/_4$-inch wood structural panels-exterior type $^1/_4$-inch hardboard Insulated vinyl siding Masonry veneer Metal siding Polypropylene siding Stucco on metal lath Vinyl siding
None	—	$^3/_8$-inch exterior-grade *wood structural panels*
For SI: 1 inch = 25.4 mm. a. Any combination of sheathing, paper and exterior finish is permitted.		

TABLE 722.6.2(4)—FLOORING OR ROOFING OVER WOOD FRAMING[a]			
ASSEMBLY	**STRUCTURAL MEMBERS**	**SUBFLOOR OR ROOF DECK**	**FINISHED FLOORING OR ROOFING**
Floor	Wood	$^{15}/_{32}$-inch wood structural panels or $^{11}/_{16}$-inch T & G softwood	Hardwood or softwood flooring on building paper; resilient flooring; parquet floor; felted-synthetic fiber floor coverings, carpeting, or ceramic tile on $^1/_4$-inch-thick fiber-cement underlayment or $^3/_8$-inch-thick panel-type underlayment; ceramic tile on $1^1/_4$-inch mortar bed.
Roof	Wood	$^{15}/_{32}$-inch wood structural panels or $^{11}/_{16}$-inch T & G softwood	Finished roofing material with or without insulation
For SI: 1 inch = 25.4 mm. a. This table applies only to wood joist construction. It is not applicable to wood truss construction.			

TABLE 722.6.2(5)—TIME ASSIGNED FOR ADDITIONAL PROTECTION	
DESCRIPTION OF ADDITIONAL PROTECTION	**FIRE RESISTANCE (minutes)**
Add to the fire-resistance rating of wood stud walls if the spaces between the studs are completely filled with glass fiber mineral wool batts weighing not less than 2 pounds per cubic foot (0.6 pound per square foot of wall surface), or cellulose insulation having a nominal density not less than 2.6 pounds per cubic foot.	15
For SI: 1 pound/cubic foot = 16.0185 kg/m^3.	

722.6.2.1 Fire-resistance rating of wood frame assemblies. The fire-resistance rating of a wood frame assembly is equal to the sum of the time assigned to the membrane on the fire-exposed side, the time assigned to the framing members and the time assigned for additional contribution by other protective measures such as insulation. The membrane on the unexposed side shall not be included in determining the fire resistance of the assembly.

722.6.2.2 Time assigned to membranes. Table 722.6.2(1) indicates the time assigned to membranes on the fire-exposed side.

722.6.2.3 Exterior walls. For an exterior wall with a fire separation distance greater than 10 feet (3048 mm), the wall is assigned a rating dependent on the interior membrane and the framing as described in Table 722.6.2(1) and Table 722.6.2(2). The membrane on the outside of the nonfire-exposed side of exterior walls with a fire separation distance greater than 10 feet (3048 mm) shall consist of sheathing, sheathing paper and siding as described in Table 722.6.2(3).

722.6.2.4 Floors and roofs. In the case of a floor or roof, the standard test provides only for testing for fire exposure from below. Except as noted in Section 703.2.3, floor or roof assemblies of wood framing shall have an upper membrane consisting of a subfloor and finished floor conforming to Table 722.6.2(4) or any other membrane that has a contribution to fire resistance of not less than 15 minutes in Table 722.6.2(1).

722.6.2.5 Additional protection. Table 722.6.2(5) indicates the time increments to be added to the fire resistance where glass fiber, rockwool, slag mineral wool or cellulose insulation is incorporated in the assembly.

722.6.2.6 Fastening. Fastening of wood frame assemblies and the fastening of membranes to the wood framing members shall be done in accordance with Chapter 23.

722.7 Fire-resistance rating for mass timber. The required fire resistance of mass timber elements in Section 602.4 shall be determined in accordance with Section 703.2 *or Section 703.3*. The fire-resistance rating of building elements shall be as required in Tables

601 and 705.5 and as specified elsewhere in this code. The fire-resistance rating of the mass timber elements shall consist of the fire resistance of the unprotected element added to the protection time of the noncombustible protection.

722.7.1 Minimum required protection. Where required by Sections 602.4.1 through 602.4.3, noncombustible protection shall be provided for mass timber building elements in accordance with Table 722.7.1(1). The rating, in minutes, contributed by the noncombustible protection of mass timber building elements, components or assemblies, shall be established in accordance with Section 703.6. The protection contributions indicated in Table 722.7.1(2) shall be deemed to comply with this requirement where installed and fastened in accordance with Section 722.7.2.

TABLE 722.7.1(1)—PROTECTION REQUIRED FROM NONCOMBUSTIBLE COVERING MATERIAL

REQUIRED FIRE-RESISTANCE RATING OF BUILDING ELEMENT PER TABLE 601 AND TABLE 705.5 (hours)	MINIMUM PROTECTION REQUIRED FROM NONCOMBUSTIBLE PROTECTION (minutes)
1	40
2	80
3 or more	120

TABLE 722.7.1(2)—PROTECTION PROVIDED BY NONCOMBUSTIBLE COVERING MATERIAL

NONCOMBUSTIBLE PROTECTION	PROTECTION CONTRIBUTION (minutes)
$^1/_2$-inch Type X gypsum board	25
$^5/_8$-inch Type X gypsum board	40

722.7.2 Installation of gypsum board noncombustible protection. Gypsum board complying with Table 722.7.1(2) shall be installed in accordance with this section.

722.7.2.1 Interior surfaces. Layers of Type X gypsum board serving as noncombustible protection for interior surfaces of wall and ceiling assemblies determined in accordance with Table 722.7.1(1) shall be installed in accordance with the following:

1. Each layer shall be attached with Type S drywall screws of sufficient length to penetrate the mass timber at least 1 inch (25 mm) when driven flush with the paper surface of the gypsum board.

   Exception: The third layer, where determined necessary by Section 722.7, shall be permitted to be attached with 1-inch (25 mm) No. 6 Type S drywall screws to furring channels in accordance with AISI S220.
2. Screws for attaching the base layer shall be 12 inches (305 mm) on center in both directions.
3. Screws for each layer after the base layer shall be 12 inches (305 mm) on center in both directions and offset from the screws of the previous layers by 4 inches (102 mm) in both directions.
4. All panel edges of any layer shall be offset 18 inches (457 mm) from those of the previous layer.
5. All panel edges shall be attached with screws sized and offset as in Items 1 through 4 and placed at least 1 inch (25 mm) but not more than 2 inches (51 mm) from the panel edge.
6. All panels installed at wall-to-ceiling intersections shall be installed such that ceiling panels are installed first and the wall panels are installed after the ceiling panel has been installed and is fitted tight to the ceiling panel. Where multiple layers are required, each layer shall repeat this process.
7. All panels installed at a wall-to-wall intersection shall be installed such that the panels covering an exterior wall or a wall with a greater fire-resistance rating shall be installed first and the panels covering the other wall shall be fitted tight to the panel covering the first wall. Where multiple layers are required, each layer shall repeat this process.
8. Panel edges of the face layer shall be taped and finished with joint compound. Fastener heads shall be covered with joint compound.
9. Panel edges protecting mass timber elements adjacent to unprotected mass timber elements in accordance with Section 602.4.2.2 shall be covered with $1^1/_4$-inch (32 mm) metal corner bead and finished with joint compound.

722.7.2.2 Exterior surfaces. Layers of Type X gypsum board serving as noncombustible protection for the outside of the exterior mass timber walls determined in accordance with Table 722.7.1(1) shall be fastened 12 inches (305 mm) on center each way and 6 inches (152 mm) on center at all joints or ends. All panel edges shall be attached with fasteners located at least 1 inch (25 mm) but not more than 2 inches (51 mm) from the panel edge. Fasteners shall comply with one of the following:

1. Galvanized nails of minimum 12 gage with a $^7/_{16}$-inch (11 mm) head of sufficient length to penetrate the mass timber a minimum of 1 inch (25 mm).
2. Screws that comply with ASTM C1002 (Type S, W or G) of sufficient length to penetrate the mass timber a minimum of 1 inch (25 mm).

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CHAPTER

7A

MATERIALS AND CONSTRUCTION METHODS FOR EXTERIOR WILDFIRE EXPOSURE

User notes:

Provisions for Materials and Construction Methods for Exterior Wildfire Exposure are now located in Part 7, California Wildland-Urban Interface Code. See Section 101.4.8 Wildland-Urban Interface.

The provisions of Part 7, the California Wildland-Urban Interface Code, shall apply to buildings and structures located in the wildland-urban interface (WUI) or Fire Hazard Severity Zone.

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CALIFORNIA BUILDING CODE – MATRIX ADOPTION TABLE
CHAPTER 8 – INTERIOR FINISHES

(Matrix Adoption Tables are nonregulatory, intended only as an aid to the code user.
See Chapter 1 for state agency authority and building applications.)

Adopting agency	BSC	BSC-CG	SFM	HCD			DSA			OSHPD							BSCC	DPH	AGR	DWR	CEC	CA	SL	SLC
				1	2	1/AC	AC	SS	SS/CC	1	1R	2	3	4	5	6								
Adopt entire chapter	**X**			**X**	**X**			**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**								
Adopt entire chapter as amended (amended sections listed below)			**X**																					
Adopt only those sections that are listed below		**X**																						
Chapter / Section																								
801.1		X																						
Table 803.13			X																					
804.1			X																					
804.4			X																					
804.4.1			X																					
804.4.2			X																					
804.4.3			*X*																					
806.4			X																					
806.6			X																					

The state agency does not adopt sections identified by the following symbol: †

The Office of the State Fire Marshal's adoption of this chapter or individual sections is applicable to structures regulated by other state agencies pursuant to Section 1.11.

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CHAPTER

8 INTERIOR FINISHES

User notes:

About this chapter: Chapter 8 contains the performance requirements for controlling fire growth and smoke propagation within buildings by restricting interior finish and decorative materials. The provisions of this chapter require materials used as interior finishes and decorations to meet certain flame spread index or flame propagation criteria and smoke development criteria based on the relative fire hazard associated with the occupancy. The performance of the material is evaluated based on test standards.

SECTION 801—SCOPE

801.1 Scope. The provisions of this chapter shall govern the use of materials used as interior finishes, trim and decorative materials. ***[BSC-CG]*** *See California Green Building Standards Code, Chapter 5, Division 5.5 for additional finish material pollutant control requirements.*

SECTION 802—GENERAL

802.1 Interior wall and ceiling finish. The provisions of Section 803 shall limit the allowable fire performance and smoke development of interior wall and ceiling finish materials based on occupancy classification.

802.2 Interior floor finish. The provisions of Section 804 shall limit the allowable fire performance of interior floor finish materials based on occupancy classification.

[F] 802.3 Decorative materials and trim. Decorative materials and trim shall be restricted by combustibility, fire performance or flame propagation performance criteria in accordance with Section 806.

802.4 Applicability. For buildings in flood hazard areas as established in Section 1612.3, interior finishes, trim and decorative materials below the elevation required by Section 1612 shall be flood-damage-resistant materials.

802.5 Application. Combustible materials shall be permitted to be used as finish for walls, ceilings, floors and other interior surfaces of buildings.

802.6 Windows. Show windows in the exterior walls of the first story above grade plane shall be permitted to be of wood or of unprotected metal framing.

802.7 Foam plastics. Foam plastics shall not be used as interior finish except as provided in Section 803.4. Foam plastics shall not be used as interior trim except as provided in Section 806.6.1 or 2604.2. This section shall apply both to exposed foam plastics and to foam plastics used in conjunction with a textile or vinyl facing or cover.

SECTION 803—WALL AND CEILING FINISHES

803.1 General. Interior wall and ceiling finish materials shall be classified for fire performance and smoke development in accordance with Section 803.1.1 or 803.1.2, except as shown in Sections 803.1.3 through 803.15. Materials tested in accordance with Section 803.1.1 shall not be required to be tested in accordance with Section 803.1.2.

803.1.1 Interior wall and ceiling finish materials tested in accordance with NFPA 286. Interior wall and ceiling finish materials shall be classified in accordance with NFPA 286 and comply with Section 803.1.1.1. Materials complying with Section 803.1.1.1 shall be considered to also comply with the requirements of Class A.

803.1.1.1 Acceptance criteria for NFPA 286. The interior finish shall comply with the following:

1. During the 40 kW exposure, flames shall not spread to the ceiling.
2. The flame shall not spread to the outer extremity of the sample on any wall or ceiling.
3. Flashover, as defined in NFPA 286, shall not occur.
4. The peak heat release rate throughout the test shall not exceed 800 kW.
5. The total smoke released throughout the test shall not exceed 1,000 m^2.

803.1.2 Interior wall and ceiling finish materials tested in accordance with ASTM E84 or UL 723. Interior wall and ceiling finish materials shall be classified in accordance with ASTM E84 or UL 723. Such interior finish materials shall be grouped in the following classes in accordance with their flame spread and smoke-developed indices.

Class A = Flame spread index 0–25; smoke-developed index 0–450.

Class B = Flame spread index 26–75; smoke developed index 0–450.

Class C = Flame spread index 76–200; smoke-developed index 0–450.

Exception: Materials tested in accordance with Section 803.1.1 and as indicated in Sections 803.1.3 through 803.13.

803.1.3 Interior wall and ceiling finish materials with different requirements. The materials indicated in Sections 803.2 through 803.13 shall be tested as indicated in the corresponding sections.

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803.2 Thickness exemption. Materials having a thickness less than 0.036 inch (0.9 mm) applied directly to the surface of walls or ceilings shall not be required to be tested.

803.3 Heavy timber exemption. Exposed portions of building elements complying with the requirements for buildings of heavy timber construction in Section 602.4 or Section 2304.11 shall not be subject to interior finish requirements except in interior exit stairways, interior exit ramps, and exit passageways.

803.4 Foam plastics. Foam plastics shall not be used as interior finish except as provided in Section 2603.9. This section shall apply both to exposed foam plastics and to foam plastics used in conjunction with a textile or vinyl facing or cover.

803.5 Textile wall coverings. Where used as interior wall finish materials, textile wall coverings, including materials having woven or nonwoven, napped, tufted, looped or similar surface and carpet and similar textile materials, shall be tested in the manner intended for use, using the product-mounting system, including adhesive, and shall comply with the requirements of one of the following: Section 803.1.1, 803.5.1 or 803.5.2.

803.5.1 Room corner test for textile wall coverings and expanded vinyl wall coverings. Textile wall coverings and expanded vinyl wall coverings shall meet the criteria of Section 803.5.1.1 when tested in the manner intended for use in accordance with the Method B protocol of NFPA 265 using the product-mounting system, including adhesive.

803.5.1.1 Acceptance criteria for NFPA 265. The interior finish shall comply with the following:

1. During the 40 kW exposure, flames shall not spread to the ceiling.
2. The flame shall not spread to the outer extremities of the samples on the 8-foot by 12-foot (203 by 305 mm) walls.
3. Flashover, as defined in NFPA 265, shall not occur.
4. The total smoke release throughout the test shall not exceed 1,000 m^2.

803.5.2 Acceptance criteria for textile and expanded vinyl wall or ceiling coverings tested to ASTM E84 or UL 723. Textile wall and ceiling coverings and expanded vinyl wall and ceiling coverings shall have a Class A flame spread index in accordance with ASTM E84 or UL 723 and be protected by an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2. Test specimen preparation and mounting shall be in accordance with ASTM E2404.

803.6 Textile ceiling coverings. Where used as interior ceiling finish materials, textile ceiling coverings, including materials having woven or nonwoven, napped, tufted, looped or similar surface and carpet and similar textile materials, shall be tested in the manner intended for use, using the product-mounting system, including adhesive, and shall comply with the requirements of Section 803.1.1 or 803.5.2.

803.7 Expanded vinyl wall coverings. Where used as interior wall finish materials, expanded vinyl wall coverings shall be tested in the manner intended for use, using the product-mounting system, including adhesive, and shall comply with the requirements of one of the following: Section 803.1.1, 803.5.1 or 803.5.2.

803.8 Expanded vinyl ceiling coverings. Where used as interior ceiling finish materials, expanded vinyl ceiling coverings shall be tested in the manner intended for use, using the product mounting system, including adhesive, and shall comply with the requirements of Section 803.1.1 or 803.5.2.

803.9 High-density polyethylene (HDPE) and polypropylene (PP). Where high-density polyethylene or polypropylene is used as an interior finish, it shall comply with Section 803.1.1.

803.10 Site-fabricated stretch systems. Where used as interior wall or interior ceiling finish materials, site-fabricated stretch systems containing all three components described in the definition in Chapter 2 shall be tested in the manner intended for use, and shall comply with the requirements of Section 803.1.1 or with the requirements of Class A in accordance with Section 803.1.2. If the materials are tested in accordance with ASTM E84 or UL 723, specimen preparation and mounting shall be in accordance with ASTM E2573.

803.11 Laminated products factory produced with a wood substrate. Laminated products factory produced with a wood substrate shall comply with one of the following:

1. The laminated product shall meet the criteria of Section 803.1.1.1 when tested in accordance with NFPA 286 using the product-mounting system, including adhesive, as described in Section 5.8 of NFPA 286.
2. The laminated product shall have a Class A, B, or C flame spread index and smoke-developed index, based on the requirements of Table 803.13, in accordance with ASTM E84 or UL 723. Test specimen preparation and mounting shall be in accordance with ASTM E2579.

803.12 Facings or wood veneers intended to be applied on site over a wood substrate. Facings or veneers intended to be applied on site over a wood substrate shall comply with one of the following:

1. The facing or veneer shall meet the criteria of Section 803.1.1.1 when tested in accordance with NFPA 286 using the product mounting system, including adhesive, as described in Section 5.9 of NFPA 286.
2. The facing or veneer shall have a Class A, B or C flame spread index and smoke-developed index, based on the requirements of Table 803.13, in accordance with ASTM E84 or UL 723. Test specimen preparation and mounting shall be in accordance with ASTM E2404.

803.13 Interior finish requirements based on occupancy. Interior wall and ceiling finish shall have a classification such that the flame spread index and smoke-developed index values are not higher than those corresponding to the classification specified in Table 803.13 for the group and location designated. Interior wall and ceiling finish materials tested in accordance with NFPA 286 and meeting the acceptance criteria of Section 803.1.1.1, shall be permitted to be used where a Class A classification in accordance with ASTM E84 or UL 723 is required.

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TABLE 803.13—INTERIOR WALL AND CEILING FINISH REQUIREMENTS BY OCCUPANCY[k]

GROUP	SPRINKLERED[l]			NONSPRINKLERED		
	Interior exit stairways and ramps and exit passageways[a, b]	Corridors and enclosure for exit access stairways and ramps	Rooms and enclosed spaces[c]	Interior exit stairways and ramps and exit passageways[a, b]	Corridors and enclosure for exit access stairways and ramps	Rooms and enclosed spaces[c]
A-1 & A-2	B	B	C	A	A[d]	B[e]
A-3[f], A-4, A-5	B	B	C	A	A[d]	C
B, E, M, R-1	B	C[m]	C	A	B	C
R-4[n]	B	C	C	A	B	B
F	C	C	C	B	C	C
H, *L*	B	B	C[g]	*NP*	*NP*	*NP*
I-2[o]	B	B	B[h, i]	A	A	B
I-3	A	A[j]	*B*	*NP*	*NP*	*NP*
I-4	B	B	B[h, i]	A	A	B
R-2	C	C	C	B	B	C
R-2.1	*B*	*C*	*C*	*A*	*B*	*B*
R-2.2	*C*	*C*	*C*	*B*	*B*	*C*
R-3[n], *R-3.1*	C	C	C	C	C	C
S	C	C	C	B	B	C
U	**No restrictions**			**No restrictions**		

For SI: 1 inch = 25.4 mm, 1 square foot = 0.0929 m^2.

*NP = Not permitted **[SFM]***

a. Class C interior finish materials shall be permitted for wainscotting or paneling of not more than 1,000 square feet of applied surface area in the grade lobby where applied directly to a noncombustible base or over furring strips applied to a noncombustible base and fireblocked as required by Section 803.15.1.

b. In other than Group I-3 occupancies in buildings less than three stories above grade plane, Class B interior finish for nonsprinklered buildings and Class C interior finish for sprinklered buildings shall be permitted in interior exit stairways and ramps.

c. Requirements for rooms and enclosed spaces shall be based on spaces enclosed by partitions. Where a fire-resistance rating is required for structural elements, the enclosing partitions shall extend from the floor to the ceiling. Partitions that do not comply with this shall be considered to be enclosing spaces and the rooms or spaces on both sides shall be considered to be one room or space. In determining the applicable requirements for rooms and enclosed spaces, the specific occupancy thereof shall be the governing factor regardless of the group classification of the building or structure.

d. Lobby areas in Group A-1, A-2 and A-3 occupancies shall be not less than Class B materials.

e. Class C interior finish materials shall be permitted in places of assembly with an occupant load of 300 persons or less.

f. For places of religious worship, wood used for ornamental purposes, trusses, paneling or chancel furnishing shall be permitted.

g. Class B material is required where the building exceeds two stories.

h. Class C interior finish materials shall be permitted in administrative spaces.

i. Class C interior finish materials shall be permitted in rooms with a capacity of four persons or less.

j. Class B materials shall be permitted as wainscotting extending not more than 48 inches above the finished floor in corridors and exit access stairways and ramps.

k. Finish materials as provided for in other sections of this code.

l. Applies when protected by an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2.

m. Corridors in ambulatory care facilities shall be provided with Class A or B materials.

n. Where Group R-3 and R-4 occupancies are permitted in Section 903.2.8 to be protected by an automatic sprinkler system installed in accordance with Section 903.3.1.3, the requirements for a non-sprinklered building shall apply.

o. Where patients are restrained in psychiatric treatment areas of Group I-2, finishes shall comply with the requirements of a Group I-3.

803.14 Stability. Interior finish materials regulated by this chapter shall be applied or otherwise fastened in such a manner that such materials will not readily become detached where subjected to room temperatures of 200°F (93°C) for not less than 30 minutes.

803.15 Application of interior finish materials to fire-resistance-rated or noncombustible building elements. Where interior finish materials are applied on walls, ceilings or structural elements required to have a fire-resistance rating or to be of noncombustible construction, these finish materials shall comply with the provisions of this section.

803.15.1 Direct attachment and furred construction. Where walls, ceilings or structural elements are required by any provision in this code to be of fire-resistance-rated or noncombustible construction, the interior finish material shall be applied directly against such construction or to furring strips not exceeding $1^3/_4$ inches (44 mm), applied directly against such surfaces.

803.15.1.1 Furred construction. If the interior finish material is applied to furring strips, the intervening spaces between such furring strips shall comply with one of the following:

1. Be filled with material that is inorganic or noncombustible.
2. Be filled with material that meets the requirements of a Class A material in accordance with Section 803.1.1 or 803.1.2.
3. Be fireblocked at not greater than 8 feet (2438 mm) in every direction in accordance with Section 718.

Exception: Compliance with Item 1, 2 or 3 is not required where the materials used to create the concealed space are noncombustible.

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803.15.2 Set-out construction. Where walls and ceilings are required to be of fire-resistance-rated or noncombustible construction and walls are set out or ceilings are dropped distances greater than specified in Section 803.15.1, Class A finish materials, in accordance with Section 803.1.1 or 803.1.2, shall be used.

Exceptions:

1. Where interior finish materials are protected on both sides by an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2.
2. Where interior finish materials are attached to noncombustible backing or furring strips installed as specified in Section 803.15.1.1.
3. Where the combustible void is filled with a noncombustible material.

803.15.2.1 Hangers and assembly members. The hangers and assembly members of such dropped ceilings that are below the horizontal fire-resistance-rated floor or roof assemblies shall be of noncombustible materials. The construction of each set-out wall and horizontal fire-resistance-rated floor or roof assembly shall be of fire-resistance-rated construction as required elsewhere in this code.

Exception: In Types III and V construction, fire-retardant-treated wood shall be permitted for use as hangers and assembly members of dropped ceilings.

803.15.3 Heavy timber construction. Wall and ceiling finishes of all classes as permitted in this chapter that are installed directly against the wood decking or planking of heavy timber construction in Section 602.4.4.2 or 2304.11 or to wood furring strips applied directly to the wood decking or planking shall be fireblocked as specified in Section 803.15.1.1.

803.15.4 Materials. An interior wall or ceiling finish material that is not more than $^1/_4$ inch (6.4 mm) thick shall be applied directly onto the wall, ceiling or structural element without the use of furring strips and shall not be suspended away from the building element to which that finish material it is applied.

Exceptions:

1. Noncombustible interior finish materials.
2. Materials that meet the requirements of Class A materials in accordance with Section 803.1.1 or 803.1.2 where the qualifying tests were made with the material furred out from the noncombustible backing shall be permitted to be used with furring strips.
3. Materials that meet the requirements of Class A materials in accordance with Section 803.1.1 or 803.1.2 where the qualifying tests were made with the material suspended away from the noncombustible backing shall be permitted to be used suspended away from the building element.

SECTION 804—INTERIOR FLOOR FINISH

804.1 General. Interior floor finish and floor covering materials shall comply with Sections 804.2 through 804.4.2.

Exception: *In areas except Groups I-2 with detention and I-3,* floor finishes and coverings of a traditional type, such as wood, vinyl, linoleum or terrazzo, and resilient floor covering materials that are not composed of fibers.

804.2 Classification. Interior floor finish and floor covering materials required by Section 804.4.2 to be of Class I or II materials shall be classified in accordance with ASTM E648 or NFPA 253. The classification referred to herein corresponds to the classifications determined by ASTM E648 or NFPA 253 as follows: Class I, 0.45 watts/cm^2 or greater; Class II, 0.22 watts/cm^2 or greater.

804.3 Testing and identification. Interior floor finish and floor covering materials shall be tested by an agency in accordance with ASTM E648 or NFPA 253 and identified by a hang tag or other suitable method so as to identify the manufacturer or supplier and style, and shall indicate the interior floor finish or floor covering classification in accordance with Section 804.2. Carpet-type floor coverings shall be tested as proposed for use, including underlayment. Test reports confirming the information provided in the manufacturer's product identification shall be furnished to the building official on request.

804.4 Interior floor finish requirements. Interior floor covering materials shall comply with Sections 804.4.1 and 804.4.2 and interior floor finish materials shall comply with Section *804.4.3*.

804.4.1 Test requirement. In all occupancies, interior floor *finish and interior floor* covering materials shall comply with the requirements of the *ASTM Standard E648, and having a specific optical density smoke rating not to exceed 450 per ASTM E662. For Group I-3 occupancies and Group I-2 areas where patients are restrained, see Section 804.4.3.*

804.4.2 Minimum critical radiant flux. In all occupancies, interior floor finish and floor covering materials in enclosures for stairways and ramps, exit passageways, corridors and rooms or spaces not separated from corridors by partitions extending from the floor to the underside of the ceiling shall withstand a minimum critical radiant flux. The minimum critical radiant flux shall be not less than Class I in Groups I-2 and I-3 *areas where restraint is not used and R-2.1* and not less than Class II in Groups A, B, E, H, I-4, M, R-1, R-2, *R-2.2* and S*. For Group I-3 areas occupied by inmates or Group I-2 areas where patients are restrained, see Section 804.4.3.*

Exception: Where a building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2, Class II materials are permitted in any area where Class I materials are required, and materials complying with *ASTM Standard E648, and having a specific optical density smoke rating not to exceed 450 per ASTM E662 are permitted in any area where Class II materials are required.*

804.4.3 Group I-2 and Group I-3 occupancy floor surfaces. *Interior floor finish and floor coverings occupied by inmates or patients whose personal liberties are restrained shall be noncombustible.*

Exception: *Carpet or other floor covering materials may be used in areas protected by an automatic sprinkler system installed throughout in accordance with Section 903.3.1.1. Carpet or other floor coverings shall comply with the requirements of ASTM Standard E648; the minimum critical radiant flux shall be not less than Class I and the specific optical density smoke rating shall not exceed 450 per ASTM E662. Carpeting and carpet padding shall be tested as a unit in accordance with floor covering radiant panel test meeting class 1 and has a critical radiant flux limit of not less than 0.45 watt per centimeter square. The carpeting and padding shall be identified by a hang-tag or other suitable method as to manufacturer and style and shall indicate the classification of the material based on the limits set forth above.*

SECTION 805—COMBUSTIBLE MATERIALS IN TYPES I AND II CONSTRUCTION

805.1 Application. Combustible materials installed on or embedded in floors of buildings of Type I or II construction shall comply with Sections 805.1.1 through 805.1.3.

Exception: Stages and platforms constructed in accordance with Sections 410.2 and 410.3, respectively.

805.1.1 Subfloor construction. Floor sleepers, bucks and nailing blocks shall not be constructed of combustible materials, unless the space between the fire-resistance-rated floor assembly and the flooring is either solidly filled with noncombustible materials or fireblocked in accordance with Section 718, and provided that such open spaces shall not extend under or through permanent partitions or walls.

805.1.2 Wood finish flooring. Wood finish flooring is permitted to be attached directly to the embedded or fireblocked wood sleepers and shall be permitted where cemented directly to the top surface of fire-resistance-rated floor assemblies or directly to a wood subfloor attached to sleepers as provided for in Section 805.1.1.

805.1.3 Insulating boards. Combustible insulating boards not more than $^{1}/_{2}$ inch (12.7 mm) thick and covered with finish flooring are permitted where attached directly to a noncombustible floor assembly or to wood subflooring attached to sleepers as provided for in Section 805.1.1.

SECTION 806—DECORATIVE MATERIALS AND TRIM

[F] 806.1 General. The following requirements shall apply to all occupancies:

1. Furnishings or decorative materials of an explosive or highly flammable character shall not be used.
2. Fire-retardant coatings in existing buildings shall be maintained so as to retain the effectiveness of the treatment under service conditions encountered in actual use.
3. Furnishings or other objects shall not be placed to obstruct exits, access thereto, egress therefrom or visibility thereof.
4. The permissible amount of decorative vegetation and noncombustible decorative materials shall not be limited.

[F] 806.2 Combustible decorative materials. In Groups A, B, E, I, M and R-1 and in dormitories in Group R-2, curtains, draperies, fabric hangings and similar combustible decorative materials suspended from walls or ceilings shall comply with Section 806.4 and shall not exceed 10 percent of the specific wall or ceiling area to which such materials are attached.

Fixed or movable walls and partitions, paneling, wall pads and crash pads applied structurally or for decoration, acoustical correction, surface insulation or other purposes shall be considered to be interior finish, shall comply with Section 803 and shall not be considered to be decorative materials or furnishings.

Exceptions:

1. In auditoriums in Group A, the permissible amount of curtains, draperies, fabric hangings and similar combustible decorative materials suspended from walls or ceilings shall not exceed 75 percent of the aggregate wall area where the building is equipped throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.1, and where the material is installed in accordance with Section 803.15 of this code.
2. In Group R-2 dormitories, within sleeping units and dwelling units, the permissible amount of curtains, draperies, fabric hangings and similar decorative materials suspended from walls or ceiling shall not exceed 50 percent of the aggregate wall areas where the building is equipped throughout with an approved automatic sprinkler system installed in accordance with Section 903.3.1.
3. In Group B and M occupancies, the amount of combustible fabric partitions suspended from the ceiling and not supported by the floor shall comply with Section 806.4 and shall not be limited.
4. The 10-percent limit shall not apply to curtains, draperies, fabric hangings and similar combustible decorative materials used as window coverings.

[F] 806.3 Occupancy-based requirements. Occupancy-based requirements for combustible decorative materials, other than decorative vegetation, not complying with Section 806.4 shall comply with Sections 807.5.1 through 807.5.6 of the *California Fire Code*.

[F] 806.4 Acceptance criteria and reports. Where required to exhibit improved fire performance, curtains, draperies, fabric hangings and similar combustible decorative materials suspended from walls or ceilings shall be tested by an approved agency and *shall be flame resistant in accordance with the provisions set forth in CCR, Title 19, Division 1, Chapter 8*. Reports of test results shall be prepared in accordance with the test method used and furnished to the building official on request.

[F] 806.5 Pyroxylin plastic. Imitation leather or other material consisting of or coated with a pyroxylin or similarly hazardous base shall not be used in Group A occupancies.

[F] 806.6 Interior trim. Material, other than foam plastic used as interior trim, shall have a minimum *Class B flame spread and 450 smoke-developed index in Group I-3 and for all other occupancies* Class C flame spread and smoke-developed index when tested in accordance with ASTM E84 or UL 723, as described in Section 803.1.2. Combustible trim, excluding handrails and guardrails, shall not exceed 10 percent of the specific wall or ceiling area to which it is attached.

[F] 806.6.1 Foam plastic. Foam plastic used as interior trim in any occupancy shall comply with Section 2604.2.

[F] 806.7 Interior floor-wall base. Interior floor-wall base that is 6 inches (152 mm) or less in height shall be tested in accordance with Section 804.2 and shall be not less than Class II. Where a Class I floor finish is required, the floor-wall base shall be Class I.

Exception: Interior trim materials that comply with Section 806.6.

[F] 806.8 Combustible lockers. Where lockers constructed of combustible materials are used, the lockers shall be considered to be interior finish and shall comply with Section 803.

Exception: Lockers constructed entirely of wood and noncombustible materials shall be permitted to be used wherever interior finish materials are required to meet a Class C classification in accordance with Section 803.1.2.

SECTION 807—INSULATION

807.1 Insulation. Thermal and acoustical insulation shall comply with Section 720.

SECTION 808—ACOUSTICAL CEILING SYSTEMS

808.1 Acoustical ceiling systems. The quality, design, fabrication and erection of metal suspension systems for acoustical tile and lay-in panel ceilings in buildings or structures shall conform to generally accepted engineering practice, the provisions of this chapter and other applicable requirements of this code.

808.1.1 Materials and installation. Acoustical materials complying with the interior finish requirements of Section 803 shall be installed in accordance with the manufacturer's recommendations and applicable provisions for applying interior finish.

808.1.1.1 Suspended acoustical ceilings. Suspended acoustical ceiling systems shall be installed in accordance with the provisions of ASTM C635 and ASTM C636.

808.1.1.2 Fire-resistance-rated construction. Acoustical ceiling systems that are part of fire-resistance-rated construction shall be installed in the same manner used in the assembly tested and shall comply with the provisions of Chapter 7.

CALIFORNIA BUILDING CODE – MATRIX ADOPTION TABLE
CHAPTER 9 – FIRE PROTECTION AND LIFE SAFETY SYSTEMS

(Matrix Adoption Tables are nonregulatory, intended only as an aid to the code user.
See Chapter 1 for state agency authority and building applications.)

Adopting agency	BSC	BSC-CG	SFM	HCD			DSA			OSHPD							BSCC	DPH	AGR	DWR	CEC	CA	SL	SLC
				1	2	1/AC	AC	SS	SS/CC	1	1R	2	3	4	5	6								
Adopt entire chapter	X							X	X	X	X	X	X	X	X	X								
Adopt entire chapter as amended (amended sections listed below)			X	X	X																			
Adopt only those sections that are listed below						X	X																X	
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CALIFORNIA BUILDING CODE – MATRIX ADOPTION TABLE
CHAPTER 9 – FIRE PROTECTION AND LIFE SAFETY SYSTEMS—continued

Adopting agency	BSC	BSC-CG	SFM	HCD			DSA			OSHPD							BSCC	DPH	AGR	DWR	CEC	CA	SL	SLC
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Adopt entire chapter	X							X	X	X	X	X	X	X	X	X								
Adopt entire chapter as amended (amended sections listed below)			X	X	X																			
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CALIFORNIA BUILDING CODE – MATRIX ADOPTION TABLE
CHAPTER 9 – FIRE PROTECTION AND LIFE SAFETY SYSTEMS—continued

Adopting agency	BSC	BSC-CG	SFM	HCD			DSA			OSHPD							BSCC	DPH	AGR	DWR	CEC	CA	SL	SLC
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Adopt entire chapter	X							X	X	X	X	X	X	X	X	X								
Adopt entire chapter as amended (amended sections listed below)			X	X	X																			
Adopt only those sections that are listed below						X	X																X	
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CHAPTER 9 – FIRE PROTECTION AND LIFE SAFETY SYSTEMS—continued

Adopting agency	BSC	BSC-CG	SFM	HCD			DSA			OSHPD							BSCC	DPH	AGR	DWR	CEC	CA	SL	SLC
				1	2	1/AC	AC	SS	SS/CC	1	1R	2	3	4	5	6								
Adopt entire chapter	X							X	X	X	X	X	X	X	X	X								
Adopt entire chapter as amended (amended sections listed below)			X	X	X																			
Adopt only those sections that are listed below						X	X																X	
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909.20.4.2			X																					
909.20.6			X																					
909.20.6.1			X																					
909.20.6.2			X																					
910.2.1			X																					
910.3.1			X																					
911.1			X																					
911.1.6			X																					
911.1.8			X																					
912.4			X																					
912.6			X																					
913.1			X																					
913.6			X																					
915.1			X	X	X																			
915.2			X	X	X																			
915.2.1			X	X	X																			
915.2.3			X																					
915.4			X	X	X																			
915.4.1, *Exceptions 2 and 3*			X	X	X																			
915.4.2			X	X	X																			
915.4.3			X																					
915.4.4			X	X	X																			
915.5.2			X	X	X																			
915.5.3			X	X	X																			
915.6			X	X	X																			
915.6.1			X																					
915.7			X			X																		

The state agency does not adopt sections identified with the following symbol: †

The Office of the State Fire Marshal's adoption of this chapter or individual sections is applicable to structures regulated by other state agencies pursuant to Section 1.11.

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CHAPTER

9

FIRE PROTECTION AND LIFE SAFETY SYSTEMS

User notes:

About this chapter: Chapter 9 prescribes the minimum requirements for active fire protection equipment systems to perform the functions of detecting a fire, alerting the occupants or fire department of a fire emergency, mass notification, gas detection, controlling smoke and controlling or extinguishing the fire. Generally, the requirements are based on the occupancy, the height and the area of the building, because these are the factors that most affect firefighting capabilities and the relative hazard of a specific building or portion thereof. This chapter parallels and is substantially duplicated in Chapter 9 of the *California Fire Code.*

SECTION 901—GENERAL

901.1 Scope. The provisions of this chapter shall specify where fire protection and life safety systems are required and shall apply to the design, installation and operation of fire protection and life safety systems.

901.2 Fire protection systems. Fire protection and life safety systems shall be installed, repaired, operated and maintained in accordance with this code and the *California Fire Code*.

Any fire protection or life safety system for which an exception or reduction to the provisions of this code has been granted shall be considered to be a required system.

Exception: Any fire protection or life safety system or portion thereof not required by this code shall be permitted to be installed for partial or complete protection provided that such system meets the requirements of this code.

901.3 Modifications. Persons shall not remove or modify any fire protection system installed or maintained under the provisions of this code or the *California Fire Code* without approval by the building official.

901.4 Threads. Threads provided for fire department connections to automatic sprinkler systems, standpipes, yard hydrants or any other fire hose connection shall be compatible with the connections used by the local fire department.

901.5 *Administration of installation* acceptance tests. Fire protection systems shall be tested in accordance with the requirements of this code and the *California Fire Code*. Where required, the tests shall be conducted in the presence of the building official. Tests required by this code, the *California Fire Code* and the standards listed in this code shall be conducted at the expense of the owner or the owner's authorized agent. It shall be unlawful to occupy portions of a structure until the required fire protection systems within that portion of the structure have been tested and approved.

901.6 Supervisory service. Where required, fire protection systems shall be monitored by an approved supervising station in accordance with NFPA 72.

901.6.1 Automatic sprinkler systems. Automatic sprinkler systems shall be monitored by an approved supervising station.

Exceptions:

1. A supervising station is not required for automatic sprinkler systems protecting one- and two-family dwellings.
2. Limited area systems in accordance with Section 903.3.8.

901.6.2 Fire alarm systems. Fire alarm systems required by the provisions of Section 907.2 of this code and Sections 907.2 and 907.9 of the *California Fire Code* shall be monitored by an approved supervising station in accordance with Section 907.6.6 of this code.

Exceptions:

1. Single- and multiple-station smoke alarms required by Section 907.2.11.
2. Smoke detectors in Group I-3 occupancies.
3. Supervisory service is not required for automatic sprinkler systems in one- and two-family dwellings.

901.6.3 Group H. Supervision and monitoring of emergency alarm, detection and automatic fire-extinguishing systems in Group H occupancies shall be in accordance with the *California Fire Code*.

901.7 Fire areas. Where buildings, or portions thereof, are divided into fire areas so as not to exceed the limits established for requiring a fire protection system in accordance with this chapter, such fire areas shall be separated by fire walls constructed in accordance with Section 706, fire barriers constructed in accordance with Section 707, or horizontal assemblies constructed in accordance with Section 711, or a combination thereof having a fire-resistance rating of not less than that determined in accordance with Section 707.3.10.

SECTION 902—FIRE PUMP AND RISER ROOM SIZE

[F] 902.1 Pump and riser room size. Where provided, fire pump rooms and automatic sprinkler system riser rooms shall be designed with adequate space for all equipment necessary for the installation, as defined by the manufacturer, with sufficient working room around the stationary equipment. Clearances around equipment to elements of permanent construction, including other installed equipment and appliances, shall be sufficient to allow inspection, service, repair or replacement without removing such elements of permanent construction or disabling the function of a required fire-resistance-rated assembly. Fire pump and automatic sprinkler system riser rooms shall be provided with doors and unobstructed passageways large enough to allow removal of the largest piece of equipment.

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[F] 902.1.1 Access. Automatic sprinkler system risers, fire pumps and controllers shall be provided with ready access. Where located in a fire pump room or automatic sprinkler system riser room, the door shall be permitted to be locked provided that the key is available at all times.

[F] 902.1.2 Marking on access doors. Access doors for automatic sprinkler system riser rooms and fire pump rooms shall be labeled with an approved sign. The lettering shall be in contrasting color to the background. Letters shall have a minimum height of 2 inches (51 mm) with a minimum stroke of $^3/_8$ inch (10 mm).

[F] 902.1.3 Environment. Automatic sprinkler system riser rooms and fire pump rooms shall be maintained at a temperature of not less than 40°F (4°C). Heating units shall be permanently installed.

[F] 902.1.4 Lighting. Permanently installed artificial illumination shall be provided in the automatic sprinkler system riser rooms and fire pump rooms.

SECTION 903—AUTOMATIC SPRINKLER SYSTEMS

[F] 903.1 General. Automatic sprinkler systems shall comply with this section.

[F] 903.1.1 Alternative protection. Alternative automatic fire-extinguishing systems complying with Section 904 shall be permitted instead of automatic sprinkler system protection where recognized by the applicable standard and approved by the fire code official.

[F] 903.2 Where required. Approved automatic sprinkler systems in new buildings and structures shall be provided in the locations described in Sections 903.2.1 through 903.2.12 *and Sections 903.2.14 through 903.2.21.*

Exception: Spaces or areas in telecommunications buildings used exclusively for telecommunications equipment, associated electrical power distribution equipment, batteries not required to have an automatic sprinkler system by Section 1207 of the *California Fire Code* for energy storage systems and standby engines, provided that those spaces or areas are equipped throughout with an automatic smoke detection system in accordance with Section 907.2 and are separated from the remainder of the building by not less than 1-hour fire barriers constructed in accordance with Section 707 or not less than 2-hour horizontal assemblies constructed in accordance with Section 711, or both.

[F] 903.2.1 Group A. An automatic sprinkler system shall be provided throughout buildings and portions thereof used as Group A occupancies as provided in this section.

[F] 903.2.1.1 Group A-1. An automatic sprinkler system shall be provided throughout stories containing Group A-1 occupancies and throughout all stories from the Group A-1 occupancy to and including the levels of exit discharge serving that occupancy where one of the following conditions exists:

1. The fire area exceeds 12,000 square feet (1115 m^2).
2. The fire area has an occupant load of 300 or more.
3. The fire area is located on a floor other than a level of exit discharge serving such occupancies.
4. The fire area contains a multitheater complex.

[F] 903.2.1.2 Group A-2. An automatic sprinkler system shall be provided throughout stories containing Group A-2 occupancies and throughout all stories from the Group A-2 occupancy to and including the levels of exit discharge serving that occupancy where one of the following conditions exists:

1. The fire area exceeds 5,000 square feet (464 m^2).
2. The fire area has an occupant load of 100 or more.
3. The fire area is located on a floor other than a level of exit discharge serving such occupancies.
4. *The structure exceeds 5,000 square feet (465 m^2), contains more than one fire area containing a Group A-2 occupancy, and is separated into two or more buildings by fire walls of not less than 4-hour fire-resistance rating without openings.*

[F] 903.2.1.3 Group A-3. An automatic sprinkler system shall be provided throughout stories containing Group A-3 occupancies and throughout all stories from the Group A-3 occupancy to and including the levels of exit discharge serving that occupancy where one of the following conditions exists:

1. The fire area exceeds 12,000 square feet (1115 m^2).
2. The fire area has an occupant load of 300 or more.
3. The fire area is located on a floor other than a level of exit discharge serving such occupancies.
4. *The structure exceeds 12,000 square feet (1155 m^2), contains more than one fire area containing exhibition and display rooms, and is separated into two or more buildings by fire walls of not less than 4-hour fire-resistance rating without openings.*

[F] 903.2.1.4 Group A-4. An automatic sprinkler system shall be provided throughout stories containing Group A-4 occupancies and throughout all stories from the Group A-4 occupancy to and including the levels of exit discharge serving that occupancy where one of the following conditions exists:

1. The fire area exceeds 12,000 square feet (1115 m^2).
2. The fire area has an occupant load of 300 or more.
3. The fire area is located on a floor other than a level of exit discharge serving such occupancies.

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[F] 903.2.1.5 Group A-5. An automatic sprinkler system shall be provided for all enclosed Group A-5 accessory use areas in excess of 1,000 square feet (93 m^2).

[F] 903.2.1.5.1 Spaces under grandstands or bleachers. Enclosed spaces under grandstands or bleachers shall be equipped with an automatic sprinkler system in accordance with Section 903.3.1.1 where either of the following exist:

1. The enclosed area is 1,000 square feet (93 m^2) or less and is not constructed in accordance with Section 1030.1.1.1.
2. The enclosed area exceeds 1,000 square feet (93 m^2).

[F] 903.2.1.6 Assembly occupancies on roofs. Where an occupiable roof has an assembly occupancy with an occupant load exceeding 100 for Group A-2 and 300 for other Group A occupancies, all floors between the occupiable roof and the level of exit discharge shall be equipped with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2.

Exception: Open parking garages of Type I or Type II construction.

[F] 903.2.1.7 Multiple fire areas. An automatic sprinkler system shall be provided where multiple fire areas of Group A-1, A-2, A-3 or A-4 occupancies share exit or exit access components and the combined occupant load of theses fire areas is 300 or more.

[F] 903.2.2 Group B. An automatic sprinkler system shall be provided for Group B occupancies as required in Sections 903.2.2.1 and 903.2.2.2.

[F] 903.2.2.1 Ambulatory care facilities. An automatic sprinkler system shall be installed throughout the entire floor containing an ambulatory care facility where either of the following conditions exist at any time:

1. Four or more care recipients are incapable of self-preservation.
2. One or more care recipients that are incapable of self-preservation are located at other than the level of exit discharge serving such a facility.

In buildings where ambulatory care is provided on levels other than the level of exit discharge, an automatic sprinkler system shall be installed throughout the entire floor as well as all floors below where such care is provided, and all floors between the level of ambulatory care and the nearest level of exit discharge, the level of exit discharge, and all floors below the level of exit discharge.

Exception: Floors classified as an open parking garage are not required to be sprinklered.

[F] 903.2.2.2 Laboratories involving testing, research and development. An automatic sprinkler system shall be installed throughout the fire areas utilized for the research and development or testing of lithium-ion or lithium metal batteries.

[F] 903.2.3 Group E. An automatic sprinkler system shall be provided for Group E occupancies as follows:

1. Throughout all Group E fire areas greater than 12,000 square feet (1115 m^2) in area.
2. The Group E fire area is located on a floor other than a level of exit discharge serving such occupancies.

   Exception: In buildings where every classroom has not fewer than one exterior exit door at ground level, an automatic sprinkler system is not required in any area below the lowest level of exit discharge serving that area.
3. The Group E fire area has an occupant load of 300 or more.
4. *In rooms or areas with special hazards such as laboratories, vocational shops and other such areas where hazardous materials in quantities not exceeding the maximum allowable quantity are used or stored.*
5. *Throughout any Group E structure greater than 12,000 square feet (1115 m^2) in area, which contains more than one fire area, and which is separated into two or more buildings by fire walls of not less than 4-hour fire resistance rating without openings.*
6. *For public school state funded construction projects see Section 903.2.19.*
7. *For public school campuses: Kindergarten through 12th grade, see Section 903.2.20.*

[F] 903.2.4 Group F-1. An automatic sprinkler system shall be provided throughout all buildings containing a Group F-1 occupancy where one of the following conditions exists:

1. A Group F-1 fire area exceeds 12,000 square feet (1115 m^2).
2. A Group F-1 fire area is located more than three stories above grade plane.
3. The combined area of all Group F-1 fire areas on all floors, including any mezzanines, exceeds 24,000 square feet (2230 m^2).
4. A Group F-1 occupancy is used to manufacture lithium-ion or lithium metal batteries.
5. A Group F-1 occupancy is used to manufacture vehicles, energy storage systems or equipment containing lithium-ion or lithium metal batteries where the batteries are installed as part of the manufacturing process.

[F] 903.2.4.1 Woodworking operations. An automatic sprinkler system shall be provided throughout all Group F-1 occupancy fire areas that contain woodworking operations in excess of 2,500 square feet (232 m^2) in area that generate finely divided combustible waste or use finely divided combustible materials.

[SFM] *A fire wall of less than four-hour fire-resistance rating without openings, or any fire wall with openings, shall not be used to establish separate fire areas.*

[F] 903.2.4.2 Group F-1 distilled spirits. An automatic sprinkler system shall be provided throughout a Group F-1 fire area used for the manufacture of distilled spirits.

[F] 903.2.4.3 Group F-1 upholstered furniture or mattresses. An automatic sprinkler system shall be provided throughout a Group F-1 fire area that exceeds 2,500 square feet (232 m^2) used for the manufacture of upholstered furniture or mattresses.

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[F] 903.2.5 Group H. Automatic sprinkler systems shall be provided in high-hazard occupancies as required in Sections 903.2.5.1 through 903.2.5.3.

[F] 903.2.5.1 General. An automatic sprinkler system shall be installed in Group H occupancies.

[F] 903.2.5.2 Group H-5 occupancies. An automatic sprinkler system shall be installed throughout buildings containing Group H-5 occupancies. The design of the automatic sprinkler system shall be not less than that required by this code for the occupancy hazard classifications in accordance with Table 903.2.5.2.

Where the design area of the automatic sprinkler system consists of a corridor protected by one row of sprinklers, the maximum number of sprinklers required to be calculated is 13.

[F] TABLE 903.2.5.2—GROUP H-5 AUTOMATIC SPRINKLER SYSTEM DESIGN CRITERIA

LOCATION	OCCUPANCY HAZARD CLASSIFICATION
Fabrication areas	Ordinary Hazard Group 2
Service corridors	Ordinary Hazard Group 2
Storage rooms without dispensing	Ordinary Hazard Group 2
Storage rooms with dispensing	Extra Hazard Group 2
Corridors	Ordinary Hazard Group 2

[F] 903.2.5.3 Pyroxylin plastics. An automatic sprinkler system shall be provided in buildings, or portions thereof, where cellulose nitrate film or pyroxylin plastics are manufactured, stored or handled in quantities exceeding 100 pounds (45 kg).

903.2.5.4 Group H occupancies located on the 11th story and above. *The fire sprinkler system shall be designed and zoned to provide separate indication upon water-flow for each side of the 2-hour fire-smoke barrier on the 11th story and above.*

[F] 903.2.6 Group I. An automatic sprinkler system shall be provided throughout buildings with a Group I fire area.

Exceptions:

1. *Those areas exempted by Section 407.6 of the California Building Code.*
2. *Pursuant to Health and Safety Code Section 13113(d), Group I-2 occupancies, or any alterations thereto, located in Type IA construction in existence on March 4, 1972.*

903.2.6.1 Group I-2. *In an existing, unsprinklered Group I-2, nurse station open to fire-resistive exit access corridors shall be protected by an automatic sprinkler system located directly above the nurse station. It shall be permitted to connect the automatic sprinkler system to the domestic water service.*

903.2.6.2 Group I-3. *Every building, or portion thereof, where inmates or persons are in custody or restrained shall be protected by an automatic sprinkler system conforming to NFPA 13. The main sprinkler control valve or valves and all other control valves in the system shall be locked in the open position and electrically supervised so that at least an audible and visual alarm will sound at a constantly attended location when valves are closed. The sprinkler branch piping serving cells may be embedded in the concrete construction.*

[F] 903.2.7 Group M. An automatic sprinkler system shall be provided throughout buildings containing a Group M occupancy where one of the following conditions exists:

1. A Group M fire area exceeds 12,000 square feet (1115 m^2).
2. A Group M fire area is located more than three stories above grade plane.
3. The combined area of all Group M fire areas on all floors, including any mezzanines, exceeds 24,000 square feet (2230 m^2).
4. *The structure exceeds 24,000 square feet (465 m^2), contains more than one fire area containing a Group M occupancy, and is separated into two or more buildings by fire walls of not less than 4-hour fire resistance rating without openings.*

[F] 903.2.7.1 High-piled storage. An automatic sprinkler system shall be provided in accordance with the *California Fire Code* in all buildings of Group M where storage of merchandise is in high-piled or rack storage arrays.

[F] 903.2.7.2 Group M upholstered furniture or mattresses. An automatic sprinkler system shall be provided throughout a Group M fire area where the area used for the display and sale of upholstered furniture or mattresses exceeds 5,000 square feet (464 m^2).

[F] 903.2.7.3 Lithium-ion or lithium metal battery storage. An automatic sprinkler system shall be provided in a room or space within a Group M occupancy where required for the storage of lithium-ion or lithium metal batteries by Section 320 of the *California Fire Code* or Chapter 32 of the *California Fire Code*.

[F] 903.2.8 Group R. An automatic sprinkler system installed in accordance with Section 903.3 shall be provided throughout all buildings with a Group R fire area.

Exceptions:

1. *Existing Group R-3 occupancies converted to Group R-3.1 occupancies not housing bedridden clients, not housing nonambulatory clients above the first floor and not housing clients above the second floor.*
2. *Existing Group R-3 occupancies converted to Group R-3.1 occupancies housing only one bedridden client and complying with Section 435.8.3.3.*

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3. *Pursuant to Health and Safety Code Section 13113 occupancies housing ambulatory children only, none of whom are mentally ill children or children with intellectual disabilities, and the buildings or portions thereof in which such children are housed are not more than two stories in height, and buildings or portions thereof housing such children have an automatic fire alarm system activated by approved smoke detectors.*
4. *Pursuant to Health and Safety Code Section 13143.6 occupancies licensed for protective social care which house ambulatory clients only, none of whom is a child (under the age of 18 years) or who is elderly (65 years of age or over).*

When not used for height increases or for area increases, an automatic sprinkler system installed in accordance with Section 903.3.1.2 shall be allowed in Group R-2.1 occupancies.

An automatic sprinkler system designed in accordance with Section 903.3.1.3 shall not be utilized in Group R-2.1 or R-4 occupancies.

[F] 903.2.8.1 Group R-3. An automatic sprinkler system installed in accordance with Section 903.3.1.3 shall be permitted in Group R-3 occupancies.

[F] 903.2.8.2 Group R-4. An automatic sprinkler system installed in accordance with Section *903.3.1.2* shall be permitted in Group R-4 occupancies.

[F] 903.2.8.3 Care facilities. An automatic sprinkler system installed in accordance with Section 903.3.1.3 shall be permitted in care facilities with five or fewer individuals in a single-family dwelling.

[F] 903.2.9 Group S-1. An automatic sprinkler system shall be provided throughout all buildings containing a Group S-1 occupancy where one of the following conditions exists:

1. A Group S-1 fire area exceeds 12,000 square feet (1115 m^2).
2. A Group S-1 fire area is located more than three stories above grade plane.
3. The combined area of all Group S-1 fire areas on all floors, including any mezzanines, exceeds 24,000 square feet (2230 m^2).
4. A Group S-1 fire area used for the storage of commercial motor vehicles where the fire area exceeds 5,000 square feet (464 m^2).
5. A Group S-1 fire area used for the storage of lithium-ion or lithium metal powered vehicles where the fire area exceeds 500 square feet (46.4 m^2).

[F] 903.2.9.1 Repair garages. An automatic sprinkler system shall be provided throughout all buildings used as repair garages in accordance with Section 406, as shown:

1. Buildings having two or more stories above grade plane, including basements, with a fire area containing a repair garage exceeding 10,000 square feet (929 m^2).
2. Buildings not more than one story above grade plane, with a fire area containing a repair garage exceeding 12,000 square feet (1115 m^2).
3. Buildings with repair garages servicing vehicles parked in basements.
4. A Group S-1 fire area used for the repair of commercial motor vehicles where the fire area exceeds 5,000 square feet (464 m^2).
5. A Group S-1 fire area used for the storage of lithium-ion or lithium metal powered vehicles where the fire area exceeds 500 square feet (46.4 m^2).

[F] 903.2.9.2 Bulk storage of tires. Buildings and structures where the area for the storage of tires exceeds 20,000 cubic feet (566 m^3) shall be equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.

[F] 903.2.9.3 Group S-1 Distilled spirits or wine. An automatic sprinkler system shall be provided throughout a Group S-1 fire area used for the bulk storage of distilled spirits or wine.

[F] 903.2.9.4 Group S-1 upholstered furniture and mattresses. An automatic sprinkler system shall be provided throughout a Group S-1 fire area where the area used for the storage of upholstered furniture or mattresses exceeds 2,500 square feet (232 m^2).

Exception: Self-service storage facilities not greater than one story above grade plane where all storage spaces can be accessed directly from the exterior.

[F] 903.2.10 Group S-2 parking garages. An automatic sprinkler system shall be provided throughout buildings classified as parking garages where any of the following conditions exists:

1. Where the fire area of the enclosed parking garage in accordance with Section 406.6 exceeds 12,000 square feet (1115 m^2).
2. Where the enclosed parking garage in accordance with Section 406.6 is located beneath other groups.

   Exception: Enclosed parking garages located beneath Group R-3 occupancies.
3. Where the fire area of the open parking garage in accordance with Section 406.5 exceeds 48,000 square feet (4460 m^2).

[F] 903.2.10.1 Commercial parking garages. An automatic sprinkler system shall be provided throughout buildings used for storage of commercial motor vehicles where the fire area exceeds 5,000 square feet (464 m^2).

[F] 903.2.10.2 Mechanical-access enclosed parking garages. An approved automatic sprinkler system shall be provided throughout buildings used for the storage of motor vehicles in a mechanical-access enclosed parking garage. The portion of the building that contains the mechanical-access enclosed parking garage shall be protected with a specially engineered automatic sprinkler system.

[F] 903.2.11 Specific building areas and hazards. In all occupancies other than Group U, an automatic sprinkler system shall be installed for building design or hazards in the locations set forth in Sections 903.2.11.1 through 903.2.11.6.

[F] 903.2.11.1 Stories without openings. An automatic sprinkler system shall be installed throughout all stories, including basements, of all buildings where the floor area exceeds 1,500 square feet (139.4 m^2) and where the story does not comply with the following criteria for exterior wall openings:

1. Openings below grade that lead directly to ground level by an exterior stairway complying with Section 1011 or an outside ramp complying with Section 1012. Openings shall be located in each 50 linear feet (15 240 mm), or fraction thereof, of exterior wall in the story on not fewer than one side. The required openings shall be distributed such that the lineal distance between adjacent openings does not exceed 50 feet (15 240 mm).
2. Openings entirely above the adjoining ground level totaling not less than 20 square feet (1.86 m^2) in each 50 linear feet (15 240 mm), or fraction thereof, of exterior wall in the story on not fewer than one side. The required openings shall be distributed such that the lineal distance between adjacent openings does not exceed 50 feet (15 240 mm). The height of the bottom of the clear opening shall not exceed 44 inches (1118 mm) measured from the floor.

[F] 903.2.11.1.1 Opening dimensions and access. Openings shall have a minimum dimension of not less than 30 inches (762 mm). Access to such openings shall be provided for the fire department from the exterior and shall not be obstructed in a manner such that firefighting or rescue cannot be accomplished from the exterior.

[F] 903.2.11.1.2 Openings on one side only. Where openings in a story are provided on only one side and the opposite wall of such story is more than 75 feet (22 860 mm) from such openings, the story shall be equipped throughout with an approved automatic sprinkler system, or openings shall be provided on not fewer than two sides of the story.

[F] 903.2.11.1.3 Basements. Where any portion of a basement is located more than 75 feet (22 860 mm) from openings required by Section 903.2.11.1, or where walls, partitions or other obstructions are installed that restrict the application of water from hose streams, the basement shall be equipped throughout with an approved automatic sprinkler system.

[F] 903.2.11.2 Rubbish and linen chutes. An automatic sprinkler system shall be installed at the top of rubbish and linen chutes and in their terminal rooms. Chutes shall have additional sprinkler heads installed at alternate floors and at the lowest intake. Where a rubbish chute extends through a building more than one floor below the lowest intake, the extension shall have sprinklers installed that are recessed from the drop area of the chute and protected from freezing in accordance with Section 903.3.1.1. Such sprinklers shall be installed at alternate floors, beginning with the second level below the last intake and ending with the floor above the discharge. Access to sprinklers in chutes shall be provided for servicing.

[F] 903.2.11.3 Buildings 55 feet or more in height. An automatic sprinkler system shall be installed throughout buildings that have one or more stories with an occupant load of 30 or more located 55 feet (16 764 mm) or more above the lowest level of fire department vehicle access, measured to the finished floor.

Exception: Occupancies in Group F-2.

[F] 903.2.11.4 Ducts conveying hazardous exhausts. Where required by the *California Mechanical Code*, automatic sprinklers shall be provided in ducts conveying hazardous exhaust or flammable or combustible materials.

Exception: Ducts where the largest cross-sectional diameter of the duct is less than 10 inches (254 mm).

[F] 903.2.11.5 Commercial cooking operations. An automatic sprinkler system shall be installed in commercial kitchen exhaust hood and duct systems where an automatic sprinkler system is used to comply with Section 904.

[F] 903.2.11.6 Other required fire protection systems. In addition to the requirements of Section 903.2, the provisions indicated in Table 903.2.11.6 require the installation of a fire protection system for certain buildings and areas.

[F] TABLE 903.2.11.6—ADDITIONAL REQUIRED PROTECTION SYSTEMS

SECTION	SUBJECT
402.5, 402.6.2	Covered and open mall buildings
403.3	High-rise buildings *and Group I-2 occupancies having occupied floors located more than 75 feet above the lowest level of fire department vehicle access*
404.3	Atriums
405.3	Underground structures
406.6.4	*Mechanical-access enclosed parking garages*
407.7	Group I-2
410.6	Stages
411.3	Special amusement buildings
412.2.4	Airport traffic control towers
412.3.6, 412.3.6.1, 412.5.6	Aircraft hangars
415.11.11	Group H-5 HPM exhaust ducts
416.5	Flammable finishes
417.4	Drying rooms
424.3	Play structures

[F] TABLE 903.2.11.6—ADDITIONAL REQUIRED PROTECTION SYSTEMS—continued	
SECTION	**SUBJECT**
440	*Horse racing stables*
441	*Pet kennels*
449	*Public libraries*
453	Buildings containing *Group L occupancies*
507	Unlimited area buildings
508.5.7	Live/work units
509.4	Incidental uses
1030.6.2.3	Smoke-protected assembly seating
CFC	Automatic sprinkler system requirements as set forth in Section 903.2.11.6 of the *California Fire Code*
California Fire Code Section 1207	*Stationary and mobile energy storage systems*

[F] 903.2.12 During construction. Automatic sprinkler systems required during construction, alteration and demolition operations shall be provided in accordance with Chapter 33 of the *California Fire Code*.

903.2.13 Reserved.

903.2.14 Motion picture and television production studio sound stages, approved production facilities and production locations.

903.2.14.1 Existing sound stages and approved production facilities. *All existing sound stages and approved production facilities equipped with an automatic fire sprinkler system shall be maintained in accordance with the provisions of California Fire Code Chapter 9.*

903.2.14.2 New sound stages. *All new sound stages shall be equipped with an approved automatic fire sprinkler system. The system shall be installed in accordance with the provisions of the California Fire Code Chapter 9 and shall meet the minimum design requirements of an Extra Hazard, Group 2 system.*

903.2.15 Automatic sprinkler system—existing high-rise buildings. *See California Fire Code Chapter 11 and California Existing Building Code.*

903.2.15.1 Existing Group R-1 and R-2 high-rise buildings fire-extinguishing systems. *See California Fire Code Chapter 11 and California Existing Building Code.*

903.2.16 Group L occupancies. *An automatic sprinkler system shall be installed throughout buildings housing Group L occupancies. Sprinkler systems for Group L occupancy shall be designed for the square footage area of the Group L occupancy based on an area of sprinkler operation of 2,500 square feet (232 m^2) and design density of 0.20 gpm/sf.*

In mixed occupancies, portions of floors with Group L occupancies, but not classified as Group L, shall be provided with a sprinkler protection system per NFPA 13.

903.2.16.1 Group L occupancies located on the 11th story and above. *The automatic sprinkler system shall be designed and zoned to provide separate indication upon water-flow for each side of the 2-hour fire-smoke barrier on the 11th story and above.*

903.2.17 Fixed guideway and passenger rail transit systems.

903.2.17.1 Automatic sprinkler system. *An automatic sprinkler system shall be installed in all stations of fixed guideway transit systems.*

Exceptions:

1. *Guideways when the closest sprinkler heads to the guideway are within 3 feet (914 mm) of the edge, over the platform, and spaced 6 feet (1829 mm) on center parallel to the guideway.*
2. *Station agent booths not exceeding 150 square feet (13.9 m^2) in area, when provided with an approved smoke detector connected to the building fire alarm system.*
3. *Power substations.*
4. *Machinery rooms, electrical rooms and train control rooms protected by an approved automatic fixed fire-extinguishing system.*
5. *Open stations.*
6. *Station platform areas open to three or more sides.*

903.2.17.2 Station guideway deluge system. *Underground stations and stations in open cuts with walls 5 feet (1524 mm) above he top of the running rail and with a raised platform shall be provided with an under-vehicle guideway manually activated deluge sprinkler system. In open cut stations, such system shall be provided in guideways which are situated between a raised platform edge and a retaining wall.*

903.2.17.2.1 *Systems shall be provided along the entire length of track at each station platform.*

903.2.17.2.2 *Deluge nozzles with caps shall be located in the approximate center of track with spacing designed to completely wet the undersides of the vehicle at the applied density.*

903.2.17.2.3 *System density shall be a minimum of 0.19 gallon per minute (gpm) per square foot (0.72 L/m per m^2) for the design area. When more than one zone is provided, two adjacent zones are required to be considered operating for calculating purposes.*

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903.2.17.2.4 *Deluge systems shall be directly connected to a water supply capable of supplying the required flow rate for a minimum 30-minute duration.*

903.2.17.2.5 *Controls or manually operable valves shall be in a location acceptable to the Fire Code Official. All deluge systems shall be monitored by the station fire alarm system.*

903.2.17.2.6 *Each valve shall be monitored by a separate circuit. The alarm panel shall be located in an area normally occupied by station personnel or signals shall be transmitted to the operations control center (OCC).*

903.2.18 Group U private garages and carports accessory to Group R-3 occupancies. *Carports with habitable space above and attached garages, accessory to Group R-3 occupancies, shall be protected by residential fire sprinklers in accordance with this section. Residential fire sprinklers shall be connected to, and installed in accordance with, an automatic residential fire sprinkler system that complies with Section R313 of the California Residential Code or with NFPA 13D. Fire sprinklers shall be residential sprinklers or quick-response sprinklers, designed to provide a minimum density of 0.05 gpm/ft^2 (2.04 mm/min) over the area of the garage and/or carport, but not to exceed two sprinklers for hydraulic calculation purposes. Garage doors shall not be considered obstructions with respect to sprinkler placement.*

Exception: *An automatic residential fire sprinkler system shall not be required when additions or alterations are made to existing carports and/or garages that do not have an automatic residential fire sprinkler system installed in accordance with this section.*

903.2.19 Public school state funded construction projects for kindergarten through 12th grade - automatic sprinkler system requirements.

903.2.19.1 New public school campus. *An automatic sprinkler system shall be provided in all occupancies. The provisions of this section shall apply to any public school project consisting of one or more buildings on a new school campus and receiving state funds pursuant to Leroy F. Greene School Facilities Act of 1998, California Education Code Sections 17070.10 through 17079. For purposes of this section, new campus refers to a school site, where an application for construction of original buildings was made to DSA on or after July 1, 2002.*

An automatic fire sprinkler system is not required in locations identified in Section 903.2.20.

903.2.19.1.1 *Sprinklers shall be installed in spaces where the ceiling creates a "ceiling-plenum" or space above the ceiling is utilized for environmental air.*

903.2.19.1.2 Fire-resistive substitution for new campus. *A new public school campus shall be entitled to include in the design and construction documents all of the applicable fire-resistive construction substitutions as permitted by this code.*

903.2.20 Public school campuses. *An automatic fire sprinkler system is not required to be provided in the following locations on Kindergarten through 12th grade.*

1. *A relocatable building that is sited with the intent that it be at the site for less than three years and is sited upon a temporary foundation in a manner that is designed to permit easy removal. Also see CCR, Title 24, Part 1, California Administrative Code, Section 4-314 for definition of relocatable building.*
2. *Detached buildings designed and used for non-instructional purposes that meet the applicable requirements for that occupancy. Buildings would include but not be limited to:*

   Concession Stand
   Press Box
   Restroom Facilities
   Shade Structure
   Snack Bar
   Storage Building
   Ticket Booth

903.2.21 Required exterior entrance covers. *An automatic sprinkler system shall be provided throughout covered exterior entrances required by California Building Code Section 11B-206.4.10 or Section 1224.33.2.1.*

[F] 903.3 Installation requirements. Automatic sprinkler systems shall be designed and installed in accordance with Sections 903.3.1 through *903.3.9*.

[F] 903.3.1 Standards. Automatic sprinkler systems shall be designed and installed in accordance with Section 903.3.1.1 unless otherwise permitted by Sections 903.3.1.2 and 903.3.1.3 and other chapters of this code, as applicable.

[F] 903.3.1.1 NFPA 13 sprinkler systems. Where the provisions of this code require that a building or portion thereof be equipped throughout with an automatic sprinkler system in accordance with this section, sprinklers shall be installed throughout in accordance with NFPA 13 *as amended in Chapter 35* except as provided in Sections 903.3.1.1.1 through 903.3.1.1.*4*.

[F] 903.3.1.1.1 Exempt locations. Automatic sprinklers shall not be required in the following rooms or areas where such rooms or areas are protected with an approved automatic fire detection system in accordance with Section 907.2 that will respond to visible or invisible particles of combustion. Sprinklers shall not be omitted from a room merely because it is damp, of fire-resistance-rated construction or contains electrical equipment.

1. A room or space where sprinklers constitute a serious life or fire hazard because of the nature of the contents, *as determined by the authority having jurisdiction.*
2. *Machine rooms, machinery spaces, control rooms, control spaces and hoistways associated with fire service access elevators provided in accordance with Section 3007.*

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3. Machine rooms, machinery spaces, control rooms and control spaces *and hoistways* associated with occupant evacuation elevators designed in accordance with Section 3008.
4. *Spaces or areas in telecommunications buildings used exclusively for telecommunications equipment, and associated electrical power distribution equipment, provided those spaces or areas are equipped throughout with an automatic smoke detection system in accordance with Section 907.2 and are separated from the remainder of the building by not less than 1-hour fire barriers constructed in accordance with Section 707 or not less than 2-hour horizontal assemblies constructed in accordance with Section 712, or both.*

[F] 903.3.1.1.2 Bathrooms. In Group R occupancies sprinklers shall not be required in bathrooms that do not exceed 55 square feet (5 m^2) in area and are located within individual dwelling units or sleeping units, provided that walls and ceilings, including the walls and ceilings behind a shower enclosure or tub, are of noncombustible or limited-combustible materials with a 15-minute thermal barrier rating.

[F] 903.3.1.1.3 Lithium-ion or lithium metal batteries. Where automatic sprinkler systems are required by this code for areas containing lithium-ion or lithium metal batteries, the design of the system shall be based on a series of fire tests. Such tests shall be conducted or witnessed and reported by an approved testing laboratory involving test scenarios that address the range of variables associated with the intended arrangement of the hazards to be protected.

903.3.1.1.4 Solar photovoltaic power systems. *Automatic sprinklers shall not be required in the following areas:*

1. *Solar photovoltaic panel structures with no use underneath. Signs may be provided, as determined by the enforcing agency prohibiting any use underneath, including storage.*
2. *Solar photovoltaic (PV) panels supported by framing that have sufficient uniformly distributed and unobstructed openings throughout the top of the array (horizontal plane) to allow heat and gases to escape, as determined by the enforcing agency.*

[F] 903.3.1.2 NFPA 13R sprinkler systems. Automatic sprinkler systems in Group R occupancies shall be permitted to be installed throughout in accordance with NFPA 13R *as amended in Chapter 35* where the Group R occupancy meets all of the following conditions:

1. Four stories or fewer above grade plane.
2. For other than Group R-2 occupancies, the floor level of the highest story is 30 feet (9144 mm) or less above the lowest level of fire department vehicle access.

   For Group R-2 occupancies, the roof assembly is less than 45 feet (13 716 mm) above the lowest level of fire department vehicle access. The height of the roof assembly shall be determined by measuring the distance from the lowest required fire vehicle access road surface adjacent to the building to the eave of the highest pitched roof, the intersection of the highest roof to the exterior wall, or the top of the highest parapet, whichever yields the greatest distance.
3. The floor level of the lowest story is 30 feet (9144 mm) or less below the lowest level of fire department vehicle access.

The number of stories of Group R occupancies constructed in accordance with Sections 510.2 and 510.4 shall be measured from grade plane.

[F] 903.3.1.2.1 Balconies and decks. Sprinkler protection shall be provided for exterior balconies, decks and ground floor patios of dwelling units and sleeping units where either of the following conditions exists:

1. The building is of Type V construction, provided that there is a roof or deck above.
2. Exterior balconies, decks and ground floor patios of dwelling units and sleeping units are constructed in accordance with Section 705.2.3.1, Exception 3.

Sidewall sprinklers that are used to protect such areas shall be permitted to be located such that their deflectors are within 1 inch (25 mm) to 6 inches (152 mm) below the structural members and a maximum distance of 14 inches (356 mm) below the deck of the exterior balconies and decks that are constructed of open wood joist construction.

[F] 903.3.1.2.2 Corridors and balconies in the means of egress. Sprinkler protection shall be provided in corridors and for balconies in the means of egress where any of the following conditions apply:

1. Corridors with combustible floor or walls.
2. Corridors with an interior change of direction exceeding 45 degrees (0.79 rad).
3. Corridors that are less than 50 percent open to the outside atmosphere at the ends.
4. Open-ended corridors and associated exterior stairways and ramps as specified in Section 1027.6, Exception 3.
5. Egress balconies not complying with Sections 1021.2 and 1021.3.

[F] 903.3.1.2.3 Attics. Attic protection shall be provided as follows:

1. Attics that are used or intended for living purposes or storage shall be protected by an automatic sprinkler system.
2. Where fuel-fired equipment is installed in an unsprinklered attic, not fewer than one quick-response intermediate temperature sprinkler shall be installed above the equipment.
3. Where located in a building of Type III, Type IV or Type V construction designed in accordance with Section 510.2 or 510.4, attics not required by Item 1 to have sprinklers shall comply with one of the following if the roof assembly is located more than 55 feet (16 764 mm) above the lowest level of fire department vehicle access needed to meet the provisions in Section 503.

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3.1. Provide automatic sprinkler system protection.

3.2. Construct the attic using noncombustible materials.

3.3. Construct the attic using fire-retardant-treated wood complying with Section 2303.2.

3.4. Fill the attic with noncombustible insulation.

The height of the roof assembly shall be determined by measuring the distance from the lowest required fire vehicle access road surface adjacent to the building to the eave of the highest pitched roof, the intersection of the highest roof to the exterior wall, or the top of the highest parapet, whichever yields the greatest distance. For the purpose of this measurement, required fire vehicle access roads shall include only those roads that are necessary for compliance with Section 503 of the *California Fire Code*.

[F] 903.3.1.3 NFPA 13D sprinkler systems. Automatic sprinkler systems installed in one- and two-family dwellings, Group R-3, and townhouses shall be permitted to be installed throughout in accordance with NFPA 13D *as amended in Chapter 35*.

[F] 903.3.2 Quick-response and residential sprinklers. Where automatic sprinkler systems are required by this code, quick-response or residential automatic sprinklers shall be installed in all of the following areas in accordance with Section 903.3.1 and their listings:

1. Throughout all spaces within a smoke compartment containing care recipient sleeping units in Group I-2 in accordance with this code.
2. *Reserved.*
3. Throughout all spaces within a smoke compartment containing treatment rooms in ambulatory care facilities.
4. Dwelling units and sleeping units in Group R occupancies.
5. Light-hazard occupancies as defined in NFPA 13.

[F] 903.3.3 Obstructed locations. Automatic sprinklers shall be installed with regard to obstructions that will delay activation or obstruct the water distribution pattern and shall be in accordance with the applicable automatic sprinkler system standard that is being used. Automatic sprinklers shall be installed in or under covered kiosks, displays, booths, concession stands, or equipment that exceeds 4 feet (1219 mm) in width. Not less than a 3-foot (914 mm) clearance shall be maintained between automatic sprinklers and the top of piles of combustible fibers.

Exception: Kitchen equipment under exhaust hoods protected with a fire-extinguishing system in accordance with Section 904.

[F] 903.3.4 Actuation. Automatic sprinkler systems shall be automatically actuated unless specifically provided for in this code.

[F] 903.3.5 Water supplies. Water supplies for automatic sprinkler systems shall comply with this section and the standards referenced in Section 903.3.1. The potable water supply shall be protected against backflow in accordance with *the Health and Safety Code Section 13114.7*. For connections to public waterworks systems, the water supply test used for design of fire protection systems shall be adjusted to account for seasonal and daily pressure fluctuations based on information from the water supply authority and as approved by the fire code official.

[F] 903.3.5.1 Domestic services. Where the domestic service provides the water supply for the automatic sprinkler system, the supply shall be in accordance with this section.

[F] 903.3.5.2 Residential combination services. A single combination water supply shall be allowed provided that the domestic demand is added to the sprinkler demand as required by NFPA 13R.

[F] 903.3.6 Hose threads. Fire hose threads and fittings used in connection with automatic sprinkler systems shall be as prescribed by the fire code official.

[F] 903.3.7 Fire department connections. Fire department connections for automatic sprinkler systems shall be installed in accordance with Section 912.

[F] 903.3.8 Limited area sprinkler systems. Limited area sprinkler systems shall be in accordance with the standards listed in Section 903.3.1 except as provided in Sections 903.3.8.1 through 903.3.8.5.

[F] 903.3.8.1 Number of sprinklers. Limited area sprinkler systems shall not exceed six sprinklers in any single fire area.

[F] 903.3.8.2 Occupancy hazard classification. Only areas classified by NFPA 13 as Light Hazard or Ordinary Hazard Group 1 shall be permitted to be protected by limited area sprinkler systems.

[F] 903.3.8.3 Piping arrangement. Where a limited area sprinkler system is installed in a building with an automatic wet standpipe system, sprinklers shall be supplied by the standpipe system. Where a limited area sprinkler system is installed in a building without an automatic wet standpipe system, water shall be permitted to be supplied by the plumbing system provided that the plumbing system is capable of simultaneously supplying domestic and sprinkler demands.

[F] 903.3.8.4 Supervision. Control valves shall not be installed between the water supply and sprinklers unless the valves are of an approved indicating type that are supervised or secured in the open position.

[F] 903.3.8.5 Calculations. Hydraulic calculations in accordance with NFPA 13 shall be provided to demonstrate that the available water flow and pressure are adequate to supply all sprinklers installed in any single fire area with discharge densities corresponding to the hazard classification.

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[F] 903.3.9 High-rise building floor control valves. Approved supervised indicating control valves shall be provided at the point of connection to the riser on each floor in high-rise buildings.

903.3.10 Floor control valves. *Floor control valves and waterflow detection assemblies shall be installed at each floor where any of the following occur:*

1. *Buildings where the floor level of the highest story is located more than 30 feet above the lowest level of fire department vehicle access.*
2. *Buildings that are four or more stories in height.*
3. *Buildings that are two or more stories below the highest level of fire department vehicle access.*

Exception: *Group R-3 and R-3.1 occupancies floor control valves and waterflow detection assemblies shall not be required.*

[A] 903.4 Sprinkler system supervision and alarms. Automatic sprinkler system supervision and alarms shall comply with Sections 903.4.1 through 903.4.3.

[F] 903.4.1 Electronic supervision. Valves controlling the water supply for automatic sprinkler systems, pumps, tanks, water levels and temperatures, critical air pressures and waterflow switches on all automatic sprinkler systems shall be electrically supervised by a listed fire alarm control unit.

Exceptions:

1. Automatic sprinkler systems protecting one- and two-family dwellings.
2. Limited area sprinkler systems in accordance with Section 903.3.8, provided that backflow prevention device test valves located in limited area sprinkler system supply piping shall be locked in the open position unless supplying an occupancy required to be equipped with a fire alarm system, in which case the backflow preventer valves shall be electrically supervised by a tamper switch installed in accordance with NFPA 72 and separately annunciated.
3. Automatic sprinkler systems installed in accordance with NFPA 13R where a common supply main is used to supply both domestic water and the automatic sprinkler system, and a separate shutoff valve for the automatic sprinkler system is not provided.
4. Jockey pump control valves that are sealed or locked in the open position.
5. Control valves to commercial kitchen hoods, paint spray booths or dip tanks that are sealed or locked in the open position.
6. Valves controlling the fuel supply to fire pump engines that are sealed or locked in the open position.
7. Trim valves to pressure switches in dry, preaction and deluge sprinkler systems that are sealed or locked in the open position.
8. Underground key or hub gate valves in roadway boxes.

[F] 903.4.2 Monitoring. Alarm, supervisory and trouble signals shall be distinctly different and shall be automatically transmitted to an approved supervising station or, where approved by the fire code official, shall sound an audible signal at a constantly attended location.

[F] 903.4.3 Alarms. An approved audible and visual sprinkler waterflow alarm device, located on the exterior of the building in an approved location, shall be connected to each automatic sprinkler system. Such sprinkler waterflow alarm devices shall be activated by water flow equivalent to the flow of a single sprinkler of the smallest orifice size installed in the system. Where a waterflow switch is required by Section 903.4.1 to be electrically supervised, such sprinkler waterflow alarm devices shall be powered by a fire alarm control unit or, where provided, a fire alarm system. Where a fire alarm system is provided, actuation of the automatic sprinkler system shall actuate the building fire alarm system.

Exception: Automatic sprinkler systems protecting one- and two-family dwellings.

[F] 903.5 Inspection, testing and maintenance. Automatic sprinkler systems shall be inspected, tested and maintained in accordance with the *California Fire Code*.

SECTION 904—ALTERNATIVE AUTOMATIC FIRE-EXTINGUISHING SYSTEMS

[F] 904.1 General. Automatic fire-extinguishing systems, other than automatic sprinkler systems, shall be designed, installed, inspected, tested and maintained in accordance with the provisions of this section and the applicable referenced standards.

[F] 904.2 Where permitted. Automatic fire-extinguishing systems installed as an alternative to the required automatic sprinkler systems of Section 903 shall be approved by the fire code official.

[F] 904.2.1 Restriction on using automatic sprinkler system exceptions or reductions. Automatic fire-extinguishing systems shall not be considered alternatives for the purposes of exceptions or reductions allowed for automatic sprinkler systems or by other requirements of this code.

[F] 904.2.2 Commercial hood and duct systems. Each required commercial kitchen exhaust hood and duct system required by Section 606 of the *California Fire Code* or Chapter 5 of the *California Mechanical Code* to have a Type I hood shall be protected with an approved automatic fire-extinguishing system installed in accordance with this code.

[F] 904.3 Installation. Automatic fire-extinguishing systems shall be installed in accordance with this section.

[F] 904.3.1 Electrical wiring. Electrical wiring shall be in accordance with *the California Electrical Code.*

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[F] 904.3.2 Actuation. Automatic fire-extinguishing systems shall be automatically actuated and provided with a manual means of actuation in accordance with Section 904.13.1. Where more than one hazard could be simultaneously involved in fire due to their proximity, all hazards shall be protected by a single system designed to protect all hazards that could become involved.

Exception: Multiple systems shall be permitted to be installed if they are designed to operate simultaneously.

[F] 904.3.3 System interlocking. Automatic equipment interlocks with fuel shutoffs, ventilation controls, door closers, window shutters, conveyor openings, smoke and heat vents and other features necessary for proper operation of the fire-extinguishing system shall be provided as required by the design and installation standard utilized for the hazard.

[F] 904.3.4 Alarms and warning signs. Where alarms are required to indicate the operation of automatic fire-extinguishing systems, distinctive audible and visible alarms and warning signs shall be provided to warn of pending agent discharge. Where exposure to automatic-extinguishing agents poses a hazard to persons and a delay is required to ensure the evacuation of occupants before agent discharge, a separate warning signal shall be provided to alert occupants once agent discharge has begun. Audible signals shall be in accordance with Section 907.5.2.

[F] 904.3.5 Monitoring. Where a building fire alarm system is installed, automatic fire-extinguishing systems shall be monitored by the building fire alarm system in accordance with NFPA 72.

[F] 904.4 Inspection and testing. Automatic fire-extinguishing systems shall be inspected and tested in accordance with the provisions of this section prior to acceptance.

[F] 904.4.1 Inspection. Prior to conducting final acceptance tests, all of the following items shall be inspected:

1. Hazard specification for consistency with design hazard.
2. Type, location and spacing of automatic- and manual-initiating devices.
3. Size, placement and position of nozzles or discharge orifices.
4. Location and identification of audible and visible alarm devices.
5. Identification of devices with proper designations.
6. Operating instructions.

[F] 904.4.2 Alarm testing. Notification appliances, connections to fire alarm systems and connections to approved supervising stations shall be tested in accordance with this section and Section 907 to verify proper operation.

[F] 904.4.2.1 Audible and visible signals. The audibility and visibility of notification appliances signaling agent discharge or system operation, where required, shall be verified.

[F] 904.4.3 Monitor testing. Connections to protected premises and supervising station fire alarm systems shall be tested to verify proper identification and retransmission of alarms from automatic fire-extinguishing systems.

[F] 904.5 Wet-chemical systems. Wet-chemical extinguishing systems shall be installed, maintained, periodically inspected and tested in accordance with *California Code of Regulations, Title 19, Division 1, Chapter 5 and* NFPA 17A and their listing. Records of inspections and testing shall be maintained.

[F] 904.6 Dry-chemical systems. Dry-chemical extinguishing systems shall be installed, maintained, periodically inspected and tested in accordance with *California Code of Regulations, Title 19, Division 1, Chapter 5 and* NFPA 17 and their listing. Records of inspections and testing shall be maintained.

[F] 904.7 Foam systems. Foam-extinguishing systems shall be installed, maintained, periodically inspected and tested in accordance with *California Code of Regulations, Title 19, Division 1, Chapter 5 and* NFPA 11 and their listing. Records of inspections and testing shall be maintained.

[F] 904.8 Carbon dioxide systems. Carbon dioxide extinguishing systems shall be installed, maintained, periodically inspected and tested in accordance with *California Code of Regulations, Title 19, Division 1, Chapter 5,* NFPA 12 and their listing. Records of inspections and testing shall be maintained.

[F] 904.9 Halon systems. Halogenated extinguishing systems shall be installed, maintained, periodically inspected and tested in accordance with *California Code of Regulations, Title 19, Division 1, Chapter 5,* NFPA 12A and their listing. Records of inspections and testing shall be maintained.

[F] 904.10 Clean-agent systems. Clean-agent fire-extinguishing systems shall be installed, maintained, periodically inspected and tested in accordance with *California Code of Regulations, Title 19, Division 1, Chapter 5 and* NFPA 2001 and their listing. Records of inspections and testing shall be maintained.

[F] 904.11 Automatic water mist systems. Automatic water mist systems shall be permitted in applications that are consistent with the applicable listing or approvals and shall comply with Sections 904.11.1 through 904.11.3.

[F] 904.11.1 Design and installation requirements. Automatic water mist systems shall be designed and installed in accordance with Sections 904.11.1.1 through 904.11.1.4.

[F] 904.11.1.1 General. Automatic water mist systems shall be designed and installed in accordance with NFPA 750 and the manufacturer's instructions.

[F] 904.11.1.2 Actuation. Automatic water mist systems shall be automatically actuated.

[F] 904.11.1.3 Water supply protection. Connections to a potable water supply shall be protected against backflow in accordance with the *California Plumbing Code*.

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[F] 904.11.1.4 Secondary water supply. Where a secondary water supply is required for an automatic sprinkler system, an automatic water mist system shall be provided with an approved secondary water supply.

[F] 904.11.2 Water mist system supervision and alarms. Supervision and alarms shall be provided as required for automatic sprinkler systems in accordance with Section 903.4.1.

[F] 904.11.2.1 Monitoring. Monitoring shall be provided as required for automatic sprinkler systems in accordance with Section 903.4.2.

[F] 904.11.2.2 Alarms. Alarms shall be provided as required for automatic sprinkler systems in accordance with Section 903.4.3.

[F] 904.11.2.3 Floor control valves. Floor control valves shall be provided as required for automatic sprinkler systems in accordance with Section 903.3.9.

[F] 904.11.3 Testing and maintenance. Automatic water mist systems shall be tested and maintained in accordance with the *California Code of Regulations, Title 19, Division 1, Chapter 5 and California Fire Code*.

[F] 904.12 Hybrid fire extinguishing systems. Hybrid fire extinguishing systems shall be designed, installed, maintained, periodically inspected and tested in accordance with NFPA 770. Records of inspection and testing shall be maintained.

[F] 904.13 Aerosol fire-extinguishing systems. Aerosol fire-extinguishing systems shall be installed, maintained, periodically inspected and tested in accordance with NFPA 2010, and their listing.

Such devices and appurtenances shall be *listed* and installed in compliance with manufacturers' instructions.

[F] 904.14 Commercial cooking systems. *Commercial cooking equipment that produces grease-laden vapors shall be provided with a Type I Hood, in accordance with the California Mechanical Code, and an automatic fire extinguishing system that is listed and labeled for its intended use as follows:*

1. *Wet chemical extinguishing system, complying with UL 300.*
2. *Carbon dioxide extinguishing systems.*
3. *Automatic fire sprinkler systems.*

All existing dry chemical and wet chemical extinguishing systems shall comply with UL 300.

Exception: *Public school kitchens, without deep-fat fryers, shall be upgraded to a UL 300-compliant system during state-funded modernization projects that are under the jurisdiction of the Division of the State Architect.*

All systems shall be installed in accordance with the California Mechanical Code, appropriate adopted standards, their listing and the manufacturer's installation instructions.

Exception: Factory-built commercial cooking recirculating systems that are tested in accordance with UL 710B and listed, labeled and installed in accordance with the *California Mechanical Code.*

[F] 904.14.1 Manual system operation. A manual actuation device shall be located at or near a means of egress from the cooking area not less than 10 feet (3048 mm) and not more than 20 feet (6096 mm) from the kitchen exhaust system. The manual actuation device shall be installed not more than 48 inches (1200 mm) or less than 42 inches (1067 mm) above the floor and shall clearly identify the hazard protected. The manual actuation shall require a maximum force of 40 pounds (178 N) and a maximum movement of 14 inches (356 mm) to actuate the fire suppression system.

Exceptions:

1. Automatic sprinkler systems shall not be required to be equipped with manual actuation means.
2. Where locating the manual actuation device between 10 feet (3048 mm) and 20 feet (6096 mm) from the cooking area is not feasible, the fire code official is permitted to accept a location at or near a means of egress from the cooking area, where the manual actuation device is unobstructed and in view from the means of egress.

[F] 904.14.2 System interconnection. The actuation of the fire suppression system shall automatically shut down the fuel or electrical power supply to the cooking equipment. The fuel and electrical supply reset shall be manual.

[F] 904.14.3 Carbon dioxide systems. Where carbon dioxide systems are used, there shall be a nozzle at the top of the ventilating duct. Additional nozzles that are symmetrically arranged to give uniform distribution shall be installed within vertical ducts exceeding 20 feet (6096 mm) and horizontal ducts exceeding 50 feet (15 240 mm). Dampers shall be installed at either the top or the bottom of the duct and shall be arranged to operate automatically upon activation of the fire-extinguishing system. Where the damper is installed at the top of the duct, the top nozzle shall be immediately below the damper. Automatic carbon dioxide fire-extinguishing systems shall be sufficiently sized to protect against all hazards venting through a common duct simultaneously.

[F] 904.14.3.1 Ventilation system. Commercial-type cooking equipment protected by an automatic carbon dioxide-extinguishing system shall be arranged to shut off the ventilation system upon activation.

[F] 904.14.4 Special provisions for automatic sprinkler systems. Automatic sprinkler systems protecting commercial-type cooking equipment shall be supplied from a separate, indicating-type control valve that is identified. Access to the control valve shall be provided.

[F] 904.14.4.1 Listed sprinklers. Sprinklers used for the protection of fryers shall be tested in accordance with UL 199E, listed for that application and installed in accordance with their listing.

[F] 904.15 Domestic cooking facilities. Cooktops and ranges installed in the following occupancies shall be protected in accordance with Section 904.15.1:

1. In Group *R-2.1* occupancies where domestic cooking facilities are installed in accordance with Section 420.9.
2. In Group I-2 occupancies where domestic cooking facilities are installed in accordance with Section 407.2.7.
3. In Group R-2 college dormitories where domestic cooking facilities are installed in accordance with Section 420.11.

[F] 904.15.1 Protection from fire. Cooktops and ranges shall be protected in accordance with Section 904.15.1.1 or 904.15.1.2.

[F] 904.15.1.1 Automatic fire-extinguishing system. The domestic recirculating or exterior vented cooking hood provided over the cooktop or range shall be equipped with an approved automatic fire-extinguishing system complying with the following:

1. The automatic fire-extinguishing system shall be of a type recognized for protection of domestic cooking equipment. Preengineered automatic fire-extinguishing systems shall be listed and labeled in accordance with UL 300A and installed in accordance with the manufacturer's instructions.
2. Manual actuation of the fire-extinguishing system shall be provided in accordance with Section 904.14.1.
3. Interconnection of the fuel and electric power supply shall be in accordance with Section 904.14.2.

[F] 904.15.1.2 Ignition prevention. Cooktops and ranges shall include burners that have been tested and listed to prevent ignition of cooking oil with burners turned on to their maximum heat settings and allowed to operate for 30 minutes.

SECTION 905—STANDPIPE SYSTEMS

[F] 905.1 General. Standpipe systems shall be provided in new buildings and structures in accordance with Sections 905.2 through 905.*10*. In buildings used for high-piled combustible storage, fire protection shall be in accordance with the *California Fire Code*.

[F] 905.2 Installation standard. Standpipe systems shall be installed in accordance with this section and NFPA 14 *as amended in Chapter 35.* Fire department connections for standpipe systems shall be in accordance with Section 912.

[F] 905.3 Required installations. Standpipe systems shall be installed where required by Sections 905.3.1 through *905.3.10*. Standpipe systems are allowed to be combined with automatic sprinkler systems.

Exceptions:

1. Standpipe systems are not required in Group R-2 townhouses.
2. Standpipe systems are not required in Group R-3 occupancies.

[F] 905.3.1 Height. *In other than Group R-3 and R-3.1 occupancies,* Class III standpipe systems shall be installed throughout *each floor where any of the following occur:*

1. *Buildings where the floor level of the highest story is located more than 30 feet (9144 mm) above the lowest level of fire department vehicle access.*
2. *Buildings that are four or more stories in height.*
3. *Buildings where the floor level of the lowest story is located more than 30 feet (9144 mm) below the highest level of fire department vehicle access.*
4. *Buildings that are two or more stories below the highest level of fire department vehicle access.*

Exceptions:

1. Class I standpipes are allowed in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2.
2. Class I standpipes are allowed in Group B and E occupancies.
3. Class I standpipes are allowed in parking garages.
4. Class I standpipes are allowed in basements equipped throughout with an automatic sprinkler system.
5. Class I standpipes are allowed in buildings where occupant-use hose lines will not be utilized by trained personnel or the fire department.
6. In determining the lowest level of fire department vehicle access, it shall not be required to consider either of the following:
   - 6.1. Recessed loading docks for four vehicles or less.
   - 6.2. Conditions where topography makes access from the fire department vehicle to the building impractical or impossible.

[F] 905.3.2 Group A. Class I automatic wet standpipes shall be provided in nonsprinklered Group A buildings having an occupant load exceeding 1,000 persons.

Exceptions:

1. Open-air-seating spaces without enclosed spaces.
2. Class I automatic dry and semiautomatic dry standpipes or manual wet standpipes are allowed in buildings that are not high-rise buildings.

[F] 905.3.3 Covered and open mall buildings. Covered mall and open mall buildings shall be equipped throughout with a standpipe system where required by Section 905.3.1. Mall buildings not required to be equipped with a standpipe system by Section

905.3.1 shall be equipped with Class I hose connections connected to the automatic sprinkler system sized to deliver water at 250 gallons per minute (946.4 L/min) at the hydraulically most remote hose connection while concurrently supplying the automatic sprinkler system demand. The standpipe system shall be designed to not exceed a 50 pounds per square inch (psi) (345 kPa) residual pressure loss with a flow of 250 gallons per minute (946.4 L/min) from the fire department connection to the hydraulically most remote hose connection. Hose connections shall be provided at each of the following locations:

1. Within the mall at the entrance to each exit passageway or corridor.
2. At each floor-level landing within interior exit stairways opening directly on the mall.
3. At exterior public entrances to the mall of a covered mall building.
4. At public entrances at the perimeter line of an open mall building.
5. At other locations as necessary so that the distance to reach all portions of a tenant space does not exceed 200 feet (60 960 mm) from a hose connection.

[F] 905.3.4 Underground buildings. Underground buildings shall be equipped throughout with a Class I automatic wet or manual wet standpipe system.

[F] 905.3.5 Helistops and heliports. Buildings with a rooftop helistop or heliport shall be equipped with a Class I or III standpipe system extended to the roof level on which the helistop or heliport is located in accordance with Section 2007.5 of the *California Fire Code*.

[F] 905.3.6 Marinas and boatyards. Standpipes in marinas and boatyards shall comply with Chapter 36 of the *California Fire Code*.

[F] 905.3.7 Vegetative roof and landscaped roof standpipe systems. Buildings or structures that have landscaped roofs or vegetative roofs and that are equipped with a standpipe system shall have the standpipe system extended to the roof level on which the landscaped roof or vegetative roof is located.

905.3.8 Fixed-guideway and passenger rail transit systems. *Fixed-guideway and passenger rail transit systems shall be provided with a Class 1 standpipe system in accordance with this section.*

905.3.8.1 Underground stations. *Underground stations shall be provided with an automatic Class I standpipe system.*

905.3.8.2 All other stations. *All other stations shall be provided with a Class I.*

Exception: *Open at-grade stations with unrestricted fire department access need not be provided with a standpipe system.*

905.3.9 Smokeproof enclosures. *For smokeproof enclosures see Section 909.20.*

905.3.10 Group I-3. *A housing pod within housing units where 50 or more inmates are restrained shall be provided with Class I wet standpipes. In addition, Class I wet standpipes shall be located so that it will not be necessary to extend hose lines through interlocking security doors and any doors in smoke-barrier walls, horizontal fire walls or fire barrier walls. Standpipes located in housing units may be placed in secured pipe chases.*

[F] 905.4 Location of Class I standpipe hose connections. Class I standpipe hose connections shall be provided in all of the following locations:

1. In every required interior exit stairway or exterior exit stairway, a hose connection shall be provided for each story above and below grade plane. Hose connections shall be located at the main floor landing unless otherwise approved by the fire code official. *See Section 909.20.2.3 for additional provisions in smokeproof enclosures.*

   Exception: A single hose connection shall be permitted to be installed in the open corridor or open breezeway between open stairs that are not greater than 75 feet (22 860 mm) apart.
2. On each side of the wall adjacent to the exit opening of a horizontal exit.

   Exception: Where floor areas adjacent to a horizontal exit are reachable from an interior exit stairway or exterior exit stairway hose connection by a 30-foot (9144 mm) hose stream from a nozzle attached to 100 feet (30 480 mm) of hose *as measured along the path of travel*, a hose connection shall not be required at the horizontal exit.
3. In every exit passageway, at the entrance from the exit passageway to other areas of a building.

   Exception: Where floor areas adjacent to an exit passageway are reachable from an interior exit stairway or exterior exit stairway hose connection by a 30-foot (9144 mm) hose stream from a nozzle attached to 100 feet (30 480 mm) of hose, a hose connection shall not be required at the entrance from the exit passageway to other areas of the building.
4. In covered mall buildings, adjacent to each exterior public entrance to the mall and adjacent to each entrance from an exit passageway or exit corridor to the mall. In open mall buildings, adjacent to each public entrance to the mall at the perimeter line and adjacent to each entrance from an exit passageway or exit corridor to the mall.
5. Where the roof has a slope less than 4 units vertical in 12 units horizontal (33.3-percent slope), a hose connection shall be located to serve the roof or at the highest landing of an interior exit stairway with access to the roof provided in accordance with Section 1011.12.
6. Where the most remote portion of a floor or story is more than 150 feet (45 720 mm) from a hose connection, the fire code official is authorized to require that additional hose connections be provided in approved locations. *The distances from a hose connection shall be measured along the path of travel.*

[F] 905.4.1 Protection. Risers and laterals of Class I standpipe systems not located within an interior exit stairway shall be protected by a degree of fire resistance equal to that required for vertical enclosures in the building in which they are located.

Exception: In buildings equipped throughout with an approved automatic sprinkler system, laterals that are not located within an interior exit stairway are not required to be enclosed within fire-resistance-rated construction.

[F] 905.4.2 Interconnection. In buildings where more than one standpipe is provided, the standpipes shall be interconnected in accordance with NFPA 14.

[F] 905.5 Location of Class II standpipe hose connections. Class II standpipe hose connections located so that all portions of the building are within 30 feet (9144 mm) *of a listed variable stream fog nozzle* of a nozzle attached to 100 feet (30 480 mm) of hose. Class II standpipe hose connections shall be located where they will have ready access.

[F] 905.5.1 Groups A-1 and A-2. In Group A-1 and A-2 occupancies having occupant loads exceeding 1,000 persons, hose connections shall be located on each side of the rear of the auditorium and on each side of the balcony.

[F] 905.5.2 Protection. Fire-resistance-rated protection of risers and laterals of Class II standpipe systems is not required.

[F] 905.5.3 Class II system 1-inch hose. A minimum 1-inch (25 mm) hose shall be allowed to be used for hose stations in light-hazard occupancies where investigated and listed for this service and where approved by the fire code official.

[F] 905.6 Location of Class III standpipe hose connections. Class III standpipe systems shall have hose connections located as required for Class I standpipes in Section 905.4 and shall have Class II hose connections as required in Section 905.5.

[F] 905.6.1 Protection. Risers and laterals of Class III standpipe systems shall be protected as required for Class I systems in accordance with Section 905.4.1.

[F] 905.6.2 Interconnection. In buildings where more than one Class III standpipe is provided, the standpipes shall be interconnected in accordance with NFPA 14.

[F] 905.7 Cabinets. Cabinets containing firefighting equipment such as standpipes, fire hoses, fire extinguishers or fire department valves shall not be blocked from use or obscured from view.

[F] 905.7.1 Cabinet equipment identification. Cabinets shall be identified in an approved manner by a permanently attached sign with letters not less than 2 inches (51 mm) high in a color that contrasts with the background color, indicating the equipment contained therein.

Exceptions:

1. Doors not large enough to accommodate a written sign shall be marked with a permanently attached pictogram of the equipment contained therein.
2. Doors that have either an approved visual identification clear glass panel or a complete glass door panel are not required to be marked.

[F] 905.7.2 Locking cabinet doors. Cabinets shall be unlocked.

Exceptions:

1. Visual identification panels of glass or other approved transparent frangible material that is easily broken and allows access.
2. Approved locking arrangements.
3. Group I-3 occupancies *and in mental health areas of Group I-2 occupancies.*

[F] 905.8 Dry standpipes. Dry standpipes shall not be installed.

Exception: Where subject to freezing and in accordance with NFPA 14.

[F] 905.9 Valve supervision. Valves controlling water supplies shall be supervised in the open position so that a change in the normal position of the valve will generate a supervisory signal at the supervising station required by Section 903.4.1. Where a fire alarm system is provided, a signal shall be transmitted to the control unit.

Exceptions:

1. Valves to underground key or hub valves in roadway boxes do not require supervision.
2. Valves locked in the normal position and inspected as provided in this code in buildings not equipped with a fire alarm system.

[F] 905.10 During construction. Standpipe systems required during construction and demolition operations shall be provided in accordance with Section 3311.

[F] 905.11 Locking standpipe outlet caps. The fire code official is authorized to require locking caps on the outlets on standpipes where the responding fire department carries key wrenches for the removal that are compatible with locking FDC connection caps.

SECTION 906—PORTABLE FIRE EXTINGUISHERS

[F] 906.1 Where required. Portable fire extinguishers shall be installed in all of the following locations:

1. In Group A, B, E, F, H, I, *L,* M, R-1, R-2, *R-2.1, R-2.2, R.3.1,* R-4 and S occupancies.

   Exception: In Group R-2 occupancies, portable fire extinguishers shall be required only in locations specified in Items 2 through 6 where each dwelling unit is provided with a portable fire extinguisher having a minimum rating of 1-A:10-B:C.

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2. Within 30 feet (9144 mm) distance of travel from commercial cooking equipment and from domestic cooking equipment in Group R-2 college dormitory occupancies.
3. In areas where flammable or combustible liquids are stored, used or dispensed.
4. On each floor of structures under construction, except Group R-3 occupancies, in accordance with Section 3315.1 of the *California Fire Code*.
5. Where required by the *California Fire Code* sections indicated in Table 906.1.
6. Special-hazard areas, including but not limited to laboratories, computer rooms and generator rooms, where required by the fire code official.
7. *Large and small family day-care homes shall be equipped with a portable fire extinguisher having a minimum 2A:10B:C rating.*
8. *Where required by California Code of Regulations, Title 19, Division 1, Chapter 3.*
9. *Within 30 feet (9144 mm) of domestic cooking equipment located in a Group I-2.*

[F] TABLE 906.1—ADDITIONAL REQUIRED PORTABLE FIRE EXTINGUISHERS IN THE *CALIFORNIA* FIRE CODE

IFC SECTION	SUBJECT
303.5	Asphalt kettles
307.5	Open burning
308.1.3	Open flames—torches
309.4	Powered industrial trucks
1204.10	Portable Generators
2005.2	Aircraft towing vehicles
2005.3	Aircraft welding apparatus
2005.4	Aircraft fuel-servicing tank vehicles
2005.5	Aircraft hydrant fuel-servicing vehicles
2005.6	Aircraft fuel-dispensing stations
2007.7	Heliports and helistops
2108.4	Dry cleaning plants
2305.5	Motor fuel-dispensing facilities
2310.6.4	Marine motor fuel-dispensing facilities
2311.6	Repair garages
2404.6.1	Spray-finishing operations
2405.4.2	Dip-tank operations
2406.4.2	Powder-coating areas
2804.3	Lumberyards/woodworking facilities
2808.8	Recycling facilities
2809.5	Exterior lumber storage
2903.5	Organic-coating areas
3006.3	Industrial ovens
3108.9	Tents and membrane structures
3206.10	High-piled storage
3306.5	Buildings under construction or demolition
3305.10.2	Roofing operations
3408.2	Tire rebuilding/storage
3504.2.6	Welding and other hot work
3604.4	Marinas
3703.6	Combustible fibers
5703.2.1	Flammable and combustible liquids, general
5704.3.3.1	Indoor storage of flammable and combustible liquids
5704.3.7.5.2	Liquid storage rooms for flammable and combustible liquids
5705.4.9	Solvent distillation units
5706.2.7	Farms and construction sites—flammable and combustible liquids storage
5706.4.10.1	Bulk plants and terminals for flammable and combustible liquids
5706.5.4.5	Commercial, industrial, governmental or manufacturing establishments—fuel dispensing
5706.6.4	Tank vehicles for flammable and combustible liquids
5707.5.4	On-demand mobile fueling
5906.5.7	Flammable solids
6108.2	LP-gas

[F] 906.2 General requirements. Portable fire extinguishers shall be selected and installed in accordance with this section and *California Code of Regulations, Title 19, Division 1, Chapter 3.*

Exceptions:

1. The distance of travel to reach an extinguisher shall not apply to the spectator seating portions of Group A-5 occupancies.
2. In Group I-3 *and in mental health areas of Group I-2,* portable fire extinguishers shall be permitted to be located at staff locations.

[F] 906.3 Size and distribution. The size and distribution of portable fire extinguishers shall be in accordance with Sections 906.3.1 through 906.3.4.

[F]TABLE 906.3(1)—FIRE EXTINGUISHERS FOR CLASS A FIRE HAZARDS

	LIGHT (Low) HAZARD OCCUPANCY	ORDINARY (Moderate) HAZARD OCCUPANCY	EXTRA (High) HAZARD OCCUPANCY
Minimum-rated single extinguisher	2-A[c]	2-A	4-A[a]
Maximum floor area per unit of A	3,000 square feet	1,500 square feet	1,000 square feet
Maximum floor area for extinguisher[b]	11,250 square feet	11,250 square feet	11,250 square feet
Maximum distance of travel to extinguisher	75 feet	75 feet	75 feet

For SI: 1 foot = 304.8 mm, 1 square foot = 0.0929 m^2, 1 gallon = 3.785 L.

a. Two $2^1/_2$-gallon water-type extinguishers shall be deemed the equivalent of one 4-A rated extinguisher.

b. *California Code of Regulations, Title 19, Division 1, Chapter 3* concerning application of the maximum floor area criteria.

c. Two water-type extinguishers each with a 1-A rating shall be deemed the equivalent of one 2-A rated extinguisher for Light (Low) Hazard Occupancies.

[F]TABLE 906.3(2)—FIRE EXTINGUISHERS FOR FLAMMABLE OR COMBUSTIBLE LIQUIDS WITH DEPTHS LESS THAN OR EQUAL TO 0.25 INCH[a]

TYPE OF HAZARD	BASIC MINIMUM EXTINGUISHER RATING	MAXIMUM DISTANCE OF TRAVEL TO EXTINGUISHERS (feet)
Light (Low)	5-B 10-B	30 50
Ordinary (Moderate)	10-B 20-B	30 50
Extra (High)	40-B 80-B	30 50

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

a. For requirements on water-soluble flammable liquids and alternative sizing criteria, see Section 5.5 of *California Code of Regulations, Title 19, Division 1, Chapter 3.*

[F] 906.3.1 Class A fire hazards. The minimum sizes and distribution of portable fire extinguishers for occupancies that involve primarily Class A fire hazards shall comply with Table 906.3(1).

[F] 906.3.2 Class B fire hazards. Portable fire extinguishers for occupancies involving flammable or combustible liquids with depths less than or equal to 0.25-inch (6.4 mm) shall be selected and placed in accordance with Table 906.3(2).

Portable fire extinguishers for occupancies involving flammable or combustible liquids with a depth of greater than 0.25-inch (6.4 mm) shall be selected and placed in accordance with *California Code of Regulations, Title 19, Division 1, Chapter 3.*

[F] 906.3.3 Class C fire hazards. Portable fire extinguishers for Class C fire hazards shall be selected and placed on the basis of the anticipated Class A or B hazard.

[F] 906.3.4 Class D fire hazards. Portable fire extinguishers for occupancies involving combustible metals shall be selected and placed in accordance with *California Code of Regulations, Title 19, Division 1, Chapter 3.*

[F] 906.4 Cooking equipment fires. Fire extinguishers provided for the protection of cooking equipment shall be of an approved type compatible with the automatic fire-extinguishing system agent. Cooking equipment involving solid fuels or vegetable or animal oils and fats shall be protected by a Class K-rated portable extinguisher in accordance with Sections 906.1, Item 2, 906.4.1 and 906.4.2 of the *California Fire Code*, as applicable.

[F] 906.5 Conspicuous location. Portable fire extinguishers shall be located in conspicuous locations where they will have ready access and be immediately available for use. These locations shall be along normal paths of travel, unless the fire code official determines that the hazard posed indicates the need for placement away from normal paths of travel.

[F] 906.6 Unobstructed and unobscured. Portable fire extinguishers shall not be obstructed or obscured from view. In rooms or areas in which visual obstruction cannot be completely avoided, means shall be provided to indicate the locations of extinguishers.

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[F] 906.7 Hangers and brackets. Hand-held portable fire extinguishers, not housed in cabinets, shall be installed on the hangers or brackets supplied. Hangers or brackets shall be securely anchored to the mounting surface in accordance with the manufacturer's installation instructions.

[F] 906.8 Cabinets. Cabinets used to house portable fire extinguishers shall not be locked.

Exceptions:

1. Where portable fire extinguishers subject to malicious use or damage are provided with a means of ready access.
2. In Group I-3 occupancies and in mental health areas in Group I-2 occupancies, access to portable fire extinguishers shall be permitted to be locked or to be located in staff locations provided that the staff has keys.

[F] 906.9 Extinguisher installation. The installation of portable fire extinguishers shall be in accordance with Sections 906.9.1 through 906.9.3.

[F] 906.9.1 Extinguishers weighing 40 pounds or less. Portable fire extinguishers having a gross weight not exceeding 40 pounds (18 kg) shall be installed so that their tops are not more than 5 feet (1524 mm) above the floor.

[F] 906.9.2 Extinguishers weighing more than 40 pounds. Hand-held portable fire extinguishers having a gross weight exceeding 40 pounds (18 kg) shall be installed so that their tops are not more than 3.5 feet (1067 mm) above the floor.

[F] 906.9.3 Floor clearance. The clearance between the floor and the bottom of installed hand-held portable fire extinguishers shall be not less than 4 inches (102 mm).

[F] 906.10 Wheeled units. Wheeled fire extinguishers shall be conspicuously located in a designated location.

SECTION 907—FIRE ALARM AND DETECTION SYSTEMS

[F] 907.1 General. This section covers the application, installation, performance and maintenance of fire alarm systems and their components.

[F] 907.1.1 Construction documents. Construction documents for fire alarm systems shall be of sufficient clarity to indicate the location, nature and extent of the work proposed and show in detail that it will conform to the provisions of this code, the *California Fire Code*; and relevant laws, ordinances, rules and regulations, as determined by the fire code official.

[F] 907.1.2 Fire alarm shop drawings. Shop drawings for fire alarm systems shall be prepared in accordance with NFPA 72 and submitted for review and approval prior to system installation.

[F] 907.1.3 Equipment. Systems and components shall be *California State Fire Marshal* listed and approved in accordance with *California Code of Regulations, Title 19, Division 1* for the purpose for which they are installed.

[F] 907.1.4 Fire-walls and fire barrier walls. *For the purpose of Section 907 fire walls and fire barrier walls shall not define separate buildings.*

[F] 907.1.5 Fire alarm use. *A fire alarm system shall not be used for any purpose other than fire warning or mass notification and where permitted by NFPA 72.*

[F] 907.2 Where required—new buildings and structures. An approved fire alarm system installed in accordance with the provisions of this code and NFPA 72 shall be provided in new buildings and structures in accordance with Sections 907.2.1 through *907.2.29* and provide occupant notification in accordance with Section 907.5, unless other requirements are provided by another section of this code.

Not fewer than one manual fire alarm box shall be provided in an approved location to initiate a fire alarm signal for fire alarm systems employing automatic fire detectors or waterflow detection devices. Where other sections of this code allow elimination of fire alarm boxes due to sprinklers, *or automatic fire alarm systems,* a single fire alarm box shall be installed *at a location approved by the enforcing agency.*

Exceptions:

1. The manual fire alarm box is not required for fire alarm *control units* dedicated to elevator recall control and supervisory service *and fire sprinkler monitoring.*
2. The manual fire alarm box is not required for Group R-2 occupancies unless required by the fire code official to provide a means for fire watch personnel to initiate an alarm during a sprinkler system impairment event. Where provided, the manual fire alarm box shall not be located in an area that is open to the public.
3. *The manual fire alarm box is not required to be installed when approved by the fire code official.*

[F] 907.2.1 Group A. A manual fire alarm system that activates the occupant notification system in accordance with Section 907.5 shall be installed in Group A occupancies where the occupant load due to the assembly occupancy is 300 or more, or where the Group A occupant load is more than 100 persons above or below the lowest level of exit discharge. Group A occupancies not separated from one another in accordance with Section 707.3.10 shall be considered as a single occupancy for the purposes of applying this section. Portions of Group E occupancies occupied for assembly purposes *with an occupant load of less than 1,000,* shall be provided with a fire alarm system as required for the Group E occupancy.

Exceptions:

1. Manual fire alarm boxes are not required where the building is equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 and the occupant notification appliances will activate throughout the notification zones upon sprinkler water flow.

2. Manual fire alarm boxes and the associated occupant notification system or emergency voice/alarm communication system are not required for Group A-5 outdoor bleacher-type seating having an occupant load of greater than or equal to 300 and less than 15,000 occupants, provided that all of the following are met:
    2.1. A public address system with standby power is provided.
    2.2. Enclosed spaces attached to or within 5 feet (1524 mm) of the outdoor bleacher-type seating compose, in the aggregate, a maximum of 10 percent of the overall area of the outdoor bleacher-type seating or 1,000 square feet (92.9 m^2), whichever is less.
    2.3. Enclosed accessory spaces under or attached to the outdoor bleacher-type seating shall be separated from the bleacher-type seating in accordance with Section 1030.1.1.1.
    2.4. All means of egress from the bleacher-type seating are open to the outside.
3. Manual fire alarm boxes and the associated occupant notification system or emergency voice/alarm communication system are not required for temporary Group A-5 outdoor bleacher-type seating, provided that all of the following are met:
    3.1. There are no enclosed spaces under or attached to the outdoor bleacher-type seating.
    3.2. The bleacher-type seating is erected for a period of less than 180 days.
    3.3. Evacuation of the bleacher-type seating is included in an approved fire safety plan.

Every Group A building used for educational purposes shall be provided with a manual or automatic fire alarm system. This provision shall apply to, but shall not necessarily be limited to, every community college and university.

Exception: *Privately owned trade or vocational schools or any firm or company which provides educational facilities and instructions for its employees.*

[F] 907.2.1.1 System initiation in Group A occupancies with an occupant load of 1,000 or more. Activation of the fire alarm in Group A occupancies with an occupant load of 1,000 or more shall initiate a signal using an emergency voice/alarm communications system in accordance with Section 907.5.2.2. *Group A occupancies with an occupant load of 10,000 or more, see Section 907.2.1.3.*

Exception: Where approved, the prerecorded announcement is allowed to be manually deactivated for a period of time, not to exceed 3 minutes, for the sole purpose of allowing a live voice announcement from an approved, constantly attended location.

[F] 907.2.1.2 Emergency voice/alarm communication captions. Stadiums, arenas and grandstands required to caption audible public announcements shall be in accordance with Section 907.5.2.2.4.

907.2.1.3 Public address system. *Pursuant to Health and Safety Code Section 13108.9, for all buildings or structures constructed on or after July 1, 1991, which are intended for public assemblies of 10,000 or more persons a public address system with an emergency backup power system shall be required.*

[F] 907.2.2 Group B. A manual fire alarm system, which activates the occupant notification system in accordance with Section 907.5, shall be installed in Group B occupancies where one of the following conditions exists:

1. The combined Group B occupant load of all floors is 500 or more.
2. The Group B occupant load is more than 100 persons above or below the lowest level of exit discharge.
3. The fire area contains an ambulatory care facility.
4. *Group B occupancies containing educational facilities, see Section 907.2.2.3.*

Exception: Manual fire alarm boxes are not required where the building is equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 and the occupant notification appliances will activate throughout the notification zones upon sprinkler water flow.

[F] 907.2.2.1 Ambulatory care facilities. Fire areas containing ambulatory care facilities shall be provided with an electronically supervised automatic smoke detection system installed within the ambulatory care facility and in public use areas outside of tenant spaces, including public corridors and elevator lobbies.

Exception: Buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1, provided that the occupant notification appliances will activate throughout the notification zones upon sprinkler water flow.

[F] 907.2.2.2 Laboratories involving research and development or testing. A fire alarm system activated by an air-sampling-type smoke detection system or a radiant-energy-sensing detection system shall be installed throughout the entire fire area utilized for the research and development or testing of lithium-ion or lithium metal batteries.

907.2.2.3 Group B Educational facilities. *Every Group B building used for educational purposes shall be provided with a manual or automatic fire alarm system. This provision shall apply to, but shall not necessarily be limited to, every community college and university.*

Exception: *Privately owned trade or vocational schools or any firm or company which provides educational facilities and instructions for its employees*.

[F] 907.2.3 Group E. A*n automatic* fire alarm system that initiates the occupant notification signal utilizing an emergency voice/alarm communication system meeting the requirements of Section 907.5.2.2 and installed in accordance with Section 907.6 shall be installed in Group E occupancies *with an occupant load of 50 or more persons or containing more than one classroom or one*

or more rooms used for Group E or I-4 child-care purposes in accordance with this section. Where automatic sprinkler systems or smoke detectors are installed, such systems or detectors shall be connected to the building fire alarm system. *One additional manual fire alarm box shall be located at the administration office or location approved by the AHJ.*

Exceptions:

1. *For public school state funded construction projects see Section 907.2.29.*
2. *For public schools see Section 907.2.3.7.*
3. *For private schools see Section 907.2.3.8.*

907.2.3.1 System connection. *Where more than one fire alarm control unit is used at the school campus, they shall be interconnected and shall operate all notification appliances.*

Exception: *Interconnection of fire alarm control units is not required when all the following are provided:*

1. *Buildings that are separated a minimum of 20 feet (6096 mm) and in accordance with the California Building Code; and*
2. *There is a method of two way communication between each classroom and the school administrative office approved by the fire enforcing agency; and*
3. *A method of manual activation of each fire alarm system is provided.*

907.2.3.2 Assemblies located within a Group E occupancy. *Assembly occupancies with an occupant load of less than 1,000 and located within a Group E occupancy campus or building shall be provided with a fire alarm system as required for the Group E occupancy.*

907.2.3.3 Notification*. The fire alarm system notification shall comply with the requirements of Section 907.5.*

907.2.3.4 Annunciation. *Annunciation of the fire alarm system shall comply with the requirements of Section 907.6.3.1.*

907.2.3.5 Monitoring. *School fire alarm systems shall be monitored in accordance with Section 907.6.6.4.*

907.2.3.6 Automatic fire alarm system. *Automatic detection shall be provided in accordance with this section.*

907.2.3.6.1 Smoke detectors. *Smoke detectors shall be installed at the ceiling of every room and in "ceiling-plenums" utilized for environmental air. Where the ceiling is attached directly to the underside of the roof structure, smoke detectors shall be installed on the ceiling only.*

Exception: *Where the environment or ambient conditions exceed smoke detector installation guidelines; heat detectors or fire sprinklers shall be used.*

907.2.3.6.2 Heat detectors. *Heat detectors shall be installed in combustible spaces where sprinklers or smoke detectors are not installed.*

907.2.3.7 Public school campuses. *An automatic fire alarm system in compliance with Section 907.2.3 shall be provided in new buildings for all occupancies on Kindergarten through 12th grade public school campuses.*

Exceptions:

1. *A manual fire alarm system may be provided for a relocatable building that is sited with the intent that it be at the site for less than three years and is sited upon a temporary foundation in a manner that is designed to permit easy removal. Also see CCR, Title 24, Part 1, California Administrative Code, Section 4-314 for definition of relocatable building.*
2. *A fire alarm system is not required for detached buildings designed and used for non-instructional purposes that meet the applicable requirements for that occupancy. Buildings would include but not be limited to a:*

   Concession Stand
   Press Box
   Restroom Facility
   Shade Structure
   Snack Bar
   Storage Building
   Ticket Booth

907.2.3.8 Private schools. *An automatic fire alarm system shall be provided in new buildings of private schools.*

Exception: *Automatic detection devices are not required where an approved automatic sprinkler system is installed in accordance with Section 903.3.1.1 and the occupant notification appliances will activate on sprinkler water flow and manual activation is provided from a normally occupied location.*

907.2.3.9 Day-care, Group E.

907.2.3.9.1 *An automatic fire alarm system shall be provided in all buildings used as or containing a Group E day-care.*

Exception: *Automatic detection devices are not required where an approved automatic sprinkler system is installed in accordance with Section 903.3.1.1 and the occupant notification appliances will activate on sprinkler water flow and manual activation is provided from a normally occupied location.*

907.2.3.9.2 *Smoke detectors shall be installed in every room used for sleeping or napping.*

907.2.3.10 Day-care, Group E or Group I-4 located on a public school campus. *An automatic fire alarm system shall be provided in all buildings used as or containing a Group E or Group I-4 day-care.*

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[F] 907.2.4 Group F. A manual fire alarm system that activates the occupant notification system in accordance with Section 907.5 shall be installed in Group F occupancies where both of the following conditions exist:

1. The Group F occupancy is two or more stories in height.
2. The Group F occupancy has a combined occupant load of 500 or more above or below the lowest level of exit discharge.

Exception: Manual fire alarm boxes are not required where the building is equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 and the occupant notification appliances will activate throughout the notification zones upon sprinkler water flow.

[F] 907.2.4.1 Manufacturing involving lithium-ion or lithium metal batteries. A fire alarm system activated by an air-sampling-type smoke detection system or a radiant-energy-sensing detection system shall be installed throughout the entire fire area where lithium-ion or lithium metal batteries are manufactured; and where the manufacturer of vehicles, energy storage systems or equipment containing lithium-ion or lithium metal batteries when the batteries are installed as part of the manufacturing process.

[F] 907.2.5 Group H. A manual fire alarm system that activates the occupant notification system in accordance with Section 907.5 shall be installed in Group H-5 occupancies and in occupancies used for the manufacture of organic coatings. An automatic smoke detection system shall be installed for highly toxic gases, organic peroxides and oxidizers in accordance with Chapters 60, 62 and 63, respectively, of the *California Fire Code*.

907.2.5.1 Group H occupancies located on the 11th story and above. *Manual fire alarm boxes shall be required on each side of the 2-hour fire-smoke barrier and at each exit on the 11th story and above.*

[F] 907.2.6 Group I. A manual fire alarm system that activates the occupant notification system in accordance with Section 907.5 shall be installed in Group I occupancies. An automatic smoke detection system that activates the occupant notification system in accordance with Section 907.5 shall be provided in accordance with Sections 907.2.6.1, 907.2.6.2 and 907.2.6.3.3.

Exceptions:

1. *Large family day-care.*
2. Manual fire alarm boxes in sleeping units of Group I-2 occupancies shall not be required at exits if located at all care providers' control stations or other constantly attended staff locations, provided that such manual fire alarm boxes are visible and provided with ready access, and the distances of travel required in Section 907.4.2.1 are not exceeded.
3. Occupant notification systems are not required to be activated where private mode signaling installed in accordance with NFPA 72 is approved by the fire code official and staff evacuation responsibilities are included in the fire safety and evacuation plan required by Section 404 of the *California Fire Code*.

[F] 907.2.6.1 ***Reserved.***

[F] 907.2.6.2 Group I-2. *A manual and automatic fire alarm system shall be installed in Group I-2 occupancies. Where automatic fire suppression systems or smoke detectors are installed, such systems or detectors shall be connected to the building fire alarm system.*

Exception: *Where an entire facility is used for the housing of persons, none of whom are physically or mentally handicapped or nonambulatory, and are between the ages of 18 and 64, the buildings or structures comprising such facility shall be exempt from the provisions of this subsection relating to the installation of an automatic fire alarm system.*

907.2.6.2.1 Notification. *The fire alarm notification system shall be in accordance with Section 907.5.2.5.*

907.2.6.2.2 Automatic fire detection. *Smoke detectors shall be provided in accordance with this section.*

1. *In patient and client sleeping rooms. Actuation of such detectors shall cause a visual display on the corridor side of the room in which the detector is located and shall cause an audible and visual alarm at the respective nurse station. A nurse call system listed for this function is an acceptable means of providing the audible and visual alarm at the respective nurse station and corridor room display. Operation of the smoke detector shall not include any alarm verification feature.*

   Exception: *In patient and client rooms equipped with existing automatic door closers having integral smoke detector, the integral detector is allowed to substitute for the room smoke detector, provided it meets all the required alerting functions.*
2. *Group I-2 nurse stations. A minimum of one (1) smoke detector shall be installed at the nurse station and centrally located.*
3. *In waiting areas and corridors onto which they open, in the same smoke compartment, in accordance with Section 407.2.1.*
4. In areas where patients are restrained, smoke detectors shall be installed at ceilings throughout all occupied areas and mechanical/electrical spaces of smoke compartments and in adjacent smoke compartments where occupants of those compartments utilize the same means of egress.

[F] 907.2.6.3 Group I-3 occupancies. Group I-3 occupancies shall be equipped with a manual fire alarm system and automatic smoke detection system installed for alerting staff.

Exception: *An automatic smoke detection system is not required within temporary holding cells.*

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[F] 907.2.6.3.1 System initiation. Actuation of an automatic fire-extinguishing system, automatic sprinkler system, a manual fire alarm box or a fire detector shall initiate an approved fire alarm signal that automatically notifies staff.

[F] 907.2.6.3.2 Manual fire alarm boxes. Manual fire alarm boxes are not required to be located in accordance with Section 907.4.2 where the fire alarm boxes are provided at staff-attended locations having direct supervision over areas where manual fire alarm boxes have been omitted.

[F] 907.2.6.3.2.1 Manual fire alarm boxes in detainee areas. Manual fire alarm boxes are allowed to be locked in areas occupied by detainees, provided that staff members are present within the subject area and have keys readily available to operate the manual fire alarm boxes.

[F] 907.2.6.3.3 Automatic smoke detection system. An automatic smoke detection system shall be installed throughout resident housing areas, including sleeping units and contiguous day rooms, group activity spaces and other common spaces normally open to residents.

Exceptions:

1. Other approved smoke detection arrangements *may be used to prevent damage or tampering or for other purposes provided the function of detecting any fire is fulfilled and the location of the detectors is such that the speed of detection will be equivalent to that provided by the spacing and location required in accordance with NFPA 72 as referenced in Chapter 35. This may include the location of detectors in return air ducts from cells, behind grilles or in other locations. Spot type, combination duct and open area smoke detectors may be used when located not more than 14 inches (356 mm) from the return air grill. For initiation and annunciation purposes, these detectors may be combined in groups of four. The fire code official having jurisdiction, however, must approve the proposed equivalent performance of the design.*
2. *For detention housing and/or mental health housing area(s), including correctional medical and mental health uses, automatic smoke detection system in sleeping units shall not be required when all of the following conditions are met:*
    - *2.1. All rooms, including the inmate cells are provided with an automatic sprinkler system in accordance with Section 903.3.1.1.*
    - *2.2. Building is continuously staffed by a correctional officer at all times.*
3. *Smoke detectors are not required to be installed in inmate cells with two or fewer occupants in detention facilities which do not have a correctional medical and mental health use.*
4. *Smoke detectors are not required to be installed in inmate day rooms of detention facilities where 24-hour direct visual supervision is provided by a correctional officer(s) and a manual fire alarm box is located in the control room.*

907.2.6.3.4 System annunciation. *A staff alerting fire alarm shall sound at all staff control stations on the floor of activation and an audible and visual signal shall be indicated on an annunciator at the facility control center upon activation of any automatic extinguishing system, automatic detection system, or any smoke detector or manual actuating or initiating device. In addition, where there are staff-control stations on the floor, an audible, visual and manual alarm shall be located in each staff control station.*

Fire and trouble signals of fire alarm systems and sprinkler water-flow and supervisory signals of extinguishing systems shall be annunciated in an area designated as the facility control center which shall be constantly attended by staff personnel. All such signals shall produce both an audible signal and visual display at the facility control center indicating the building, floor zone or other designated area from which the signal originated in accordance with Section 907.6.4.

All local detention facilities within the scope of Section 6031.4 of the Penal Code shall have an automatic smoke detection system. A manual fire alarm-initiating device shall be installed in all guard control stations and shall be capable of alerting personnel in a central control point to the presence of fire or smoke within the facility.

907.2.6.4 Group I-4. *An automatic smoke detection system shall be installed throughout the Group I-4, including contiguous day rooms, group activity spaces and other common spaces normally occupied by the clients. Group I-4 facilities located above the first story shall comply with the provisions of Section 436.1.*

907.2.6.5 Large family day-care. *Every large family day-care home shall be provided with at least one manual fire alarm box at a location approved by the authority having jurisdiction. Such device shall actuate a fire alarm signal, which shall be audible throughout the facility at a minimum level of 15 dB above ambient noise level. These devices need not be interconnected to any other fire alarm device, have a control unit or be electrically supervised or provided with emergency power. Such device or devices shall be attached to the structure and must be a device that is listed and approved by the Office of the State Fire Marshal.*

[F] 907.2.7 Group M. Fire alarm systems shall be required in Group M occupancies in accordance with Sections 907.2.7.1 and 907.2.7.2.

[F] 907.2.7.1 Occupant load. A manual fire alarm system that activates the occupant notification system in accordance with Section 907.5 shall be installed in Group M occupancies where one of the following conditions exists:

1. The combined Group M occupant load of all floors is 500 or more persons.
2. The Group M occupant load is more than 100 persons above or below the lowest level of exit discharge.

Exceptions:

1. A manual fire alarm system is not required in covered or open mall buildings complying with Section 402.

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2. Manual fire alarm boxes are not required where the building is equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 and the occupant notification appliances will automatically activate throughout the notification zones upon sprinkler water flow.

[F] 907.2.7.1.1 Occupant notification. During times that the building is occupied, the initiation of a signal from a manual fire alarm box or from a waterflow switch shall not be required to activate the alarm notification appliances when an alarm signal is activated at a constantly attended location from which evacuation instructions shall be initiated over an emergency voice/alarm communication system installed in accordance with Section 907.5.2.2.

[F] 907.2.7.2 Storage of lithium-ion or lithium metal batteries. A fire alarm system activated by an air-sampling-type smoke detection system or a radiant-energy-sensing detection system shall be installed in a room or space within a Group M occupancy where required for the storage of lithium-ion or lithium metal batteries in accordance with Section 320 of the *California Fire Code*.

[F] 907.2.8 Group R-1. Fire alarm systems and smoke alarms shall be installed in Group R-1 occupancies as required in Sections 907.2.8.1 through 907.2.8.3.

[F] 907.2.8.1 Manual fire alarm system. A manual fire alarm system that activates the occupant notification system in accordance with Section 907.5 shall be installed in Group R- 1 occupancies.

Exceptions:

1. A manual fire alarm system is not required in buildings not more than two stories in height where all individual dwelling units, sleeping units and contiguous attic and crawl spaces to those units are separated from each other and public or common areas by not less than 1-hour fire partitions and each individual dwelling unit and sleeping unit has an exit directly to a public way, egress court or yard.
2. Manual fire alarm boxes are not required throughout the building where all of the following conditions are met:
   2.1. The building is equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2.
   2.2. The notification appliances will activate upon sprinkler water flow.
   2.3. Not fewer than one manual fire alarm box is installed at an approved location.

[F] 907.2.8.2 Automatic smoke detection system. An automatic smoke detection system that activates the occupant notification system in accordance with Section 907.5 shall be installed throughout all interior corridors serving dwelling units or sleeping units.

Exception: An automatic smoke detection system is not required in buildings that do not have interior corridors serving dwelling units or sleeping units and where each dwelling unit or sleeping unit has a means of egress door opening directly to an exit or to an exterior exit access that leads directly to an exit.

[F] 907.2.8.3 Smoke alarms. Single- and multiple-station smoke alarms shall be installed in accordance with Section 907.2.11.

[F] 907.2.9 Group R-2, *R-2.1 and R-2.2*. Fire alarm systems and smoke alarms shall be installed in Group R-2 *and R-2.1* occupancies as required in Sections 907.2.9.1 through 907.2.9.3 *and 907.2.9.4.1. Group R-2.2 shall be equipped throughout with an automatic fire alarm system and shall have a manual fire alarm pull station at the 24-hour staff watch office.*

[F] 907.2.9.1 Manual fire alarm system. A manual fire alarm system that activates the occupant notification system in accordance with Section 907.5 shall be installed in Group R-2 occupancies where any of the following conditions apply:

1. Any dwelling unit or sleeping unit is located three or more stories above the lowest level of exit discharge.
2. Any dwelling unit or sleeping unit is located more than one story below the highest level of exit discharge of exits serving the dwelling unit or sleeping unit.
3. The building contains more than 16 dwelling units or sleeping units.
4. *Congregate residences with more than 16 occupants.*

Exceptions:

1. A fire alarm system is not required in buildings not more than two stories in height where all dwelling units or sleeping units and contiguous attic and crawl spaces are separated from each other and public or common areas by not less than 1-hour fire partitions and each dwelling unit or sleeping unit has an exit directly to a public way, egress court or yard.
2. Manual fire alarm boxes are not required where the building is equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2 and the occupant notification appliances will automatically activate throughout the notification zones upon a sprinkler water flow.
3. A fire alarm system is not required in buildings that do not have interior corridors serving dwelling units and are protected by an approved automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2, provided that dwelling units either have a means of egress door opening directly to an exterior exit access that leads directly to the exits or are served by open-ended corridors designed in accordance with Section 1027.6, Exception 3.

[F] 907.2.9.2 Smoke alarms. Single- and multiple-station smoke alarms shall be installed in accordance with Section 907.2.11.

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[F] 907.2.9.3 Group R-2 college and university buildings. An automatic smoke detection system that activates the occupant notification system in accordance with Section 907.5 shall be installed in Group R-2 occupancies operated by a college or university for student or staff housing in all of the following locations:

1. Common spaces outside of dwelling units and sleeping units.
2. Laundry rooms, mechanical equipment rooms and storage rooms.
3. All interior corridors serving sleeping units or dwelling units.

Required smoke *detectors listed in accordance with UL 268,* in dwelling units and sleeping units in Group R-2 occupancies operated by a college or university for student or staff housing shall be interconnected with the fire alarm system *to activate the occupant notification* in accordance with NFPA 72 *and shall comply with Section 907.2.11.7.*

907.2.9.4 Licensed Group R-2.1 occupancies. *Licensed Group R-2.1 occupancies housing more than six nonambulatory, elderly clients shall be provided with an approved manual and automatic fire alarm system.*

Exceptions: *Buildings housing nonambulatory clients on the first story only and which are protected throughout by the following:*

1. *An approved and supervised automatic sprinkler system, as specified in Sections 903.3.1.1 or 903.3.1.2, which upon activation will initiate the fire alarm system to notify all occupants.*
2. *A manual fire alarm system.*
3. *Smoke alarms required by Section 907.2.11.*

907.2.9.4.1 Smoke alarms. *Single- and multiple-station smoke alarms shall be installed in accordance with Section 907.2.11.*

[A] 907.2.10 Group S. A fire alarm system shall be installed in a Group S occupancy as required by Sections 907.2.10.1 and 907.2.10.2.

[F] 907.2.10.1 Public- and self-storage occupancies. A manual fire alarm system that activates the occupant notification system in accordance with Section 907.5 shall be installed in Group S public-and self-storage occupancies three stories or greater in height for interior corridors and interior common areas. Visible notification appliances are not required within storage units.

Exception: Manual fire alarm boxes are not required where the building is equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1, and the occupant notification appliances will activate throughout the notification zones upon sprinkler water flow.

[F] 907.2.10.2 Storage of lithium-ion or lithium metal batteries. A fire alarm system activated by an air-sampling-type smoke detection system or a radiant-energy-sensing detection system shall be installed throughout the entire fire area where required for the storage of lithium-ion batteries or lithium metal batteries in accordance with Section 320 of the *California Fire Code*.

[F] 907.2.11 Single- and multiple-station smoke alarms. Listed single- and multiple-station smoke alarms complying with UL 217 shall be installed in accordance with Sections 907.2.11.1 through 907.2.11.7, NFPA 72 and the manufacturer's instructions.

Exception: *For Group R occupancies. A fire alarm system with smoke detectors located in accordance with this section may be installed in lieu of smoke alarms. Upon actuation of the detector, only those notification appliances in the dwelling unit or guest room where the detector is actuated shall activate.*

[F] 907.2.11.1 Group R-1. Single- or multiple-station smoke alarms shall be installed in all of the following locations in Group R-1:

1. In sleeping areas.
2. In every room in the path of the means of egress from the sleeping area to the door leading from the dwelling unit or sleeping unit.
3. In each story within the dwelling unit or sleeping unit, including basements. For dwelling units or sleeping units with split levels and without an intervening door between the adjacent levels, a smoke alarm installed on the upper level shall suffice for the adjacent lower level provided that the lower level is less than one full story below the upper level.

See Section 907.2.11.8 for specific location requirements.

[F] 907.2.11.2 Groups R-2, *R-2.1, R-2.2,* R-3, *R-3.1 and* R-4. Single- or multiple-station smoke alarms shall be installed and maintained in Groups R-2, *R-2.1, R-2.2,* R-3, *R-3.1 and* R-4 regardless of occupant load at all of the following locations:

1. On the ceiling or wall outside of each separate sleeping area in the immediate vicinity of bedrooms.
2. In each room used for sleeping purposes.
3. In each story within a dwelling unit, including basements but not including crawl spaces and uninhabitable attics. In dwellings or dwelling units with split levels and without an intervening door between the adjacent levels, a smoke alarm installed on the upper level shall suffice for the adjacent lower level provided that the lower level is less than one full story below the upper level.
4. *In a Group R-3.1 occupancies, in addition to the above, smoke alarms shall be provided throughout the habitable areas of the dwelling unit except kitchens.*

See Section 907.2.11.8 for specific location requirements.

907.2.11.2.1 Licensed Group R-2.1 occupancies. *Licensed Group R-2.1 occupancies housing more than six nonambulatory, elderly clients shall be provided with an approved manual and automatic fire alarm system.*

Exceptions: *Buildings housing nonambulatory clients on the first story only and which are protected throughout by the following:*

1. *An approved and supervised automatic sprinkler system, as specified in the California Fire Code Sections 903.3.1.1 or 903.3.1.2, which upon activation will initiate the fire alarm system to notify all occupants.*

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2. *A manual fire alarm system.*
3. *Smoke alarms required by the California Fire Code Section 907.2.10.*

907.2.11.2.1.1 Smoke alarms. *Single- and multiple-station smoke alarms shall be installed in accordance with California Fire Code Section 907.2.11.*

907.2.11.2.2 Group I-4 occupancies. *Large family day-care homes shall be equipped with State Fire Marshal approved and listed single station residential type smoke alarms.*

907.2.11.2.3 Group R-3.1. *In all facilities housing a bedridden client, smoke alarms shall receive their primary power from the building wiring when such wiring is served from a commercial source and shall be equipped with a battery backup. Smoke alarms shall be electrically interconnected so as to cause all smoke alarms to sound a distinctive alarm signal upon actuation of any single smoke alarm. Such alarm signal shall be audible throughout the facility at a minimal level of 15 dB above ambient noise level. These devices need not be interconnected to any other fire alarm device, have a control unit, or be electrically supervised or provided with emergency power.*

907.2.11.2.4 Smoke alarms. *Smoke alarms shall be tested and maintained in accordance with the manufacturer's instructions. Smoke alarms that no longer function shall be replaced.*

907.2.11.2.5 Existing Group R occupancies. *See the California Residential Code for existing Group R-3 occupancies or Chapter 11 of the California Fire Code for all other existing Group R occupancies.*

907.2.11.2.6 Group R-4. *A manual fire alarm system that activates the occupant notification system in accordance with Section 907.5 shall be installed in Group R-4 occupancies housing nonambulatory clients.*

[F] 907.2.11.3 Installation near cooking appliances. *See Section 907.2.11.8.*

[F] 907.2.11.4 Installation near bathrooms. *See Section 907.2.11.8.*

[F] 907.2.11.5 Interconnection. Where more than one smoke alarm is required to be installed within an individual dwelling unit or sleeping unit in Group R occupancies, the smoke alarms shall be interconnected in such a manner that the activation of one alarm will activate all of the alarms in the individual unit. Physical interconnection of smoke alarms shall not be required where listed wireless alarms are installed and all alarms sound upon activation of one alarm. The alarm shall be clearly audible in all bedrooms over background noise levels with all intervening doors closed.

[F] 907.2.11.6 Power source. In new construction, *and in newly classified Group R-3.1 occupancies,* required smoke alarms shall receive their primary power from the building wiring where such wiring is served from a commercial source and shall be equipped with a battery backup. Smoke alarms with integral strobes that are not equipped with battery backup shall be connected to an emergency electrical system in accordance with Section 2702. Smoke alarms shall emit a signal when the batteries are low. Wiring shall be permanent and without a disconnecting switch other than as required for overcurrent protection.

Exception: Smoke alarms are not required to be equipped with battery backup where they are connected to an emergency electrical system that complies with Section 2702.

[F] 907.2.11.7 Smoke detection system. Smoke detectors listed in accordance with UL 268 and provided as part of the building fire alarm system shall be an acceptable alternative to single- and multiple-station smoke alarms and shall comply with the following:

1. The fire alarm system shall comply with all applicable requirements in Section 907.
2. Activation of a smoke detector in a dwelling unit or sleeping unit shall initiate alarm notification in the dwelling unit or sleeping unit in accordance with Section 907.5.2.
3. Activation of a smoke detector in a dwelling unit or sleeping unit shall not activate alarm notification appliances outside of the dwelling unit or sleeping unit, provided that a supervisory signal is generated and monitored in accordance with Section 907.6.6.

907.2.11.8 Specific location requirements.

Extract from NFPA 72 Section 29.11.3.4 Specific Location Requirements.*

This extract has been provided by NFPA for the Office of the State Fire Marshal adoption by reference as follows:

29.11.3.4 Specific location requirements. *The installation of smoke alarms and smoke detectors shall comply with the following requirements:*

(1) Smoke alarms and smoke detectors shall not be located where ambient conditions, including humidity and temperature, are outside the limits specified by the manufacturer's published instructions.

(2) Smoke alarms and smoke detectors shall not be located within unfinished attics or garages or in other spaces where temperatures can fall below 40°F (4°C) or exceed 100°F (38°C).

(3) Where the mounting surface could become considerably warmer or cooler than the room, such as a poorly insulated ceiling below an unfinished attic or an exterior wall, smoke alarms and smoke detectors shall be mounted on an inside wall.

(4) Smoke alarms and smoke detectors shall not be installed within an area of exclusion determined by a 10-foot (3.0 m) radial distance along a horizontal flow path from a stationary or fixed cooking appliance, unless listed for installation in close proximity to cooking appliances. Smoke alarms and smoke detectors installed between 10 feet (3.0 m) and 20 feet (6.1 m) along a horizontal flow path from a stationary or fixed appliance shall be equipped with an alarm-silencing means or use photoelectric detection.

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(5) Smoke alarms or smoke detectors that use photoelectric detection shall be permitted for installation at a radial distance greater than 6 feet (1.8 m) from any stationary or fixed cooking appliance when both of the following conditions are met:

(a) The kitchen or cooking area and adjacent spaces have no clear partitions or headers.

(b) The 10-foot (3.0 m) area of exclusion would prohibit the placement of a smoke alarm or smoke detector required by other sections of this code.

(6) Effective January 1, 2022, smoke alarms and smoke detectors installed between 6 feet (1.8 m) and 20 feet (6.1 m) along a horizontal flow path from a stationary or fixed cooking appliance shall be listed for resistance to common nuisance sources from cooking.

(7) Smoke alarms and smoke detectors shall not be installed within a 36-inch (910 mm) horizontal path from a door to a bathroom containing a shower or tub unless listed for installation in close proximity to such locations.

(8) Smoke alarms and smoke detectors shall not be installed within a 36-inch (910 mm) horizontal path from the supply registers of a forced air heating or cooling system and shall be installed outside of the direct airflow from those registers.

(9) Smoke alarms and smoke detectors shall not be installed within a 36-inch (910 mm) horizontal path from the tip of the blade of a ceiling-suspended (paddle) fan unless the room configuration restricts meeting this requirement.

(10) Where stairs lead to other occupied levels, a smoke alarm or smoke detector shall be located so that smoke rising in the stairway cannot be prevented from reaching the smoke alarm or smoke detector by an intervening door or obstruction.

(11) For stairways leading up from a basement, smoke alarms or smoke detectors shall be located on the basement ceiling near the entry to the stairs.

(12) For tray-shaped ceilings (coffered ceilings), smoke alarms and smoke detectors shall be installed on the highest portion of the ceiling or on the sloped portion of the ceiling within 12 inches (300 mm) vertically down from the highest point.

(13) Smoke alarms and detectors installed in rooms with joists or beams shall comply with the requirements of 17.7.3.2.4 of NFPA 72.

(14) Heat alarms and detectors installed in rooms with joists or beams shall comply with the requirements of 17.6.3 of NFPA 72.

**For additional requirements or clarification see NFPA 72.*

***907.2.11.9 Existing Group R occupancies.** See the California Residential Code for existing Group R-3 occupancies or Chapter 11 of the California Fire Code for all other existing Group R occupancies.*

[F] 907.2.12 Special amusement areas. Fire detection and alarm systems shall be provided in special amusement areas *and throughout the exit access to the point of exit discharge* in accordance with Section 411.3.

[F] 907.2.13 High-rise buildings *and Group I-2 occupancies having occupied floors located more than 75 feet above the lowest level of fire department vehicle access.* High-rise buildings *and Group I-2 occupancies having occupied floors located more than 75 feet above the lowest level of fire department vehicle access* shall be provided with an automatic smoke detection system in accordance with Section 907.2.13.1, a fire department communication system in accordance with Section 907.2.13.2 and an emergency voice/alarm communication system in accordance with Section 907.5.2.2.

Exceptions:

1. Airport traffic control towers in accordance with Sections 412 and 907.2.22.
2. Open parking garages in accordance with Section 406.5.
3. Buildings with an occupancy in Group A-5 in accordance with Section 303.1.
4. Low-hazard special occupancies in accordance with Section 503.1.1.
5. Buildings with an occupancy in Group H-1, H-2 or H-3 in accordance with Section 415.
6. In Group I-2 *and R-2.1* occupancies, the alarm shall sound at a constantly attended location and occupant notification shall be broadcast by the emergency voice/alarm communication system.

[F] 907.2.13.1 Automatic smoke detection. Automatic smoke detection in high-rise buildings *and Group I-2 occupancies having occupied floors located more than 75 feet above the lowest level of fire department vehicle access* shall be in accordance with Sections 907.2.13.1.1 and 907.2.13.1.2.

[F] 907.2.13.1.1 Area smoke detection. Area smoke detectors shall be provided in accordance with this section. Smoke detectors shall be connected to an automatic fire alarm system. The activation of any detector required by this section shall activate the emergency voice/alarm communication system in accordance with Section 907.5.2.2. In addition to smoke detectors required by Sections 907.2.1 through 907.2.9, smoke detectors shall be located as follows:

1. In each mechanical equipment, electrical, transformer, telephone equipment or similar room that is not provided with sprinkler protection.
2. In each elevator machine room, machinery space, control room and control space and in elevator lobbies.

[F] 907.2.13.1.2 Duct smoke detection. *Smoke detectors listed for use in air duct systems shall be provided in accordance with this section and the California Mechanical Code. The activation of any detector required by this section shall initiate a visible and*

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audible supervisory signal at a constantly attended location. Duct smoke detectors complying with Section 907.3.1 shall be located as follows:

1. In the main return air and exhaust air plenum of each air-conditioning system having a capacity greater than 2,000 cubic feet per minute (cfm) (0.94 m^3/s). Such detectors shall be located in a serviceable area downstream of the last duct inlet.
2. At each connection to a vertical duct or riser serving two or more stories from a return air duct or plenum of an air-conditioning system. In Group R-1 and R-2 occupancies, a smoke detector is allowed to be used in each return air riser carrying not more than 5,000 cfm (2.4 m^3/s) and serving not more than 10 air-inlet openings.

[F] 907.2.13.2 Fire department communication system. Where a wired communication system is approved in lieu of an in-building two-way emergency responder communication coverage system in accordance with Section 510 of the *California Fire Code*, the wired fire department communication system shall be designed and installed in accordance with NFPA 72 and shall operate between a fire command center complying with Section 911, elevators, elevator lobbies, emergency and standby power rooms, fire pump rooms, areas of refuge and inside interior exit stairways. The fire department communication device shall be provided at each floor level within the interior exit stairway.

[F] 907.2.13.3 Multiple-channel voice evacuation. In buildings with an occupied floor more than 120 feet (36 576 mm) above the lowest level of fire department vehicle access, voice evacuation systems for high-rise buildings shall be multiple-channel systems.

[F] 907.2.14 Atriums connecting more than two stories. A fire alarm system shall be installed in occupancies with an atrium that connects more than two stories, with smoke detection installed in locations required by a rational analysis in Section 909.4 and in accordance with the system operation requirements in Section 909.17. The system shall be activated in accordance with Section 907.5. Such occupancies in Group A, E or M shall be provided with an emergency voice/alarm communication system complying with the requirements of Section 907.5.2.2.

[F] 907.2.15 High-piled combustible storage areas. An automatic smoke detection system shall be installed throughout high-piled combustible storage areas where required by Section 3206.5 of the *California Fire Code*.

[F] 907.2.16 Aerosol storage uses. Aerosol product rooms and general-purpose warehouses containing aerosol products, aerosol cooking spray products or plastic aerosol 3 products shall be provided with an approved manual fire alarm system where required by the *California Fire Code*.

[F] 907.2.17 Lumber, wood structural panel and veneer mills. Lumber, wood structural panel and veneer mills shall be provided with a manual fire alarm system.

[F] 907.2.18 Underground buildings with smoke control systems. Where a smoke control system is installed in an underground building in accordance with this code, automatic smoke detectors shall be provided in accordance with Section 907.2.18.1.

[F] 907.2.18.1 Smoke detectors. Not fewer than one smoke detector listed for the intended purpose shall be installed in all of the following areas:

1. Mechanical equipment, electrical, transformer, telephone equipment, elevator machine or similar rooms.
2. Elevator lobbies.
3. The main return and exhaust air plenum of each air-conditioning system serving more than one story and located in a serviceable area downstream of the last duct inlet.
4. Each connection to a vertical duct or riser serving two or more floors from return air ducts or plenums of heating, ventilating and air-conditioning systems, except that in Group R occupancies, a listed smoke detector is allowed to be used in each return air riser carrying not more than 5,000 cubic feet per minute (2.4 m^3/s) and serving not more than 10 air-inlet openings.

[F] 907.2.18.2 Alarm required. Activation of the smoke control system shall activate an audible alarm at a constantly attended location.

[F] 907.2.19 Deep underground buildings. Where the lowest level of a structure is more than 60 feet (18 288 mm) below the finished floor of the lowest level of exit discharge, the structure shall be equipped throughout with a manual fire alarm system, including an emergency voice/alarm communication system installed in accordance with Section 907.5.2.2.

[F] 907.2.20 Covered and open mall buildings. Where the total floor area exceeds 50,000 square feet (4645 m^2) within either a covered mall building or within the perimeter line of an open mall building, an emergency voice/alarm communication system shall be provided. Access to emergency voice/alarm communication systems serving a mall, required or otherwise, shall be provided for the fire department. The system shall be provided in accordance with Section 907.5.2.2.

[F] 907.2.21 Residential aircraft hangars. Not fewer than one single-station smoke alarm shall be installed within a residential aircraft hangar as defined in Chapter 2 and shall be interconnected into the residential smoke alarm or other sounding device to provide an alarm that will be audible in all sleeping areas of the dwelling.

[F] 907.2.22 Airport traffic control towers. An automatic smoke detection system that activates the occupant notification system in accordance with Section 907.5 shall be provided in airport control towers in accordance with Sections 907.2.22.1 and 907.2.22.2.

Exception: Audible appliances shall not be installed within the control tower cab.

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[F] 907.2.22.1 Airport traffic control towers with multiple exits and automatic sprinklers. Airport traffic control towers with multiple exits and equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 shall be provided with smoke detectors in all of the following locations:

1. Airport traffic control cab.
2. Electrical and mechanical equipment rooms.
3. Airport terminal radar and electronics rooms.
4. Outside each opening into interior exit stairways.
5. Along the single means of egress permitted from observation levels.
6. Outside each opening into the single means of egress permitted from observation levels.

[F] 907.2.22.2 Other airport traffic control towers. Airport traffic control towers with a single exit or where sprinklers are not installed throughout shall be provided with smoke detectors in all of the following locations:

1. Airport traffic control cab.
2. Electrical and mechanical equipment rooms.
3. Airport terminal radar and electronics rooms.
4. Office spaces incidental to the tower operation.
5. Lounges for employees, including sanitary facilities.
6. Means of egress.
7. Utility shafts where access to smoke detectors can be provided.

[F] 907.2.23 Energy storage systems. An automatic smoke detection system or radiant-energy detection system shall be installed in rooms, areas and walk-in units containing energy storage systems as required in Section 1207.5.4 of the *California Fire Code.*

907.2.24 Motion picture and television production studio sound stages and approved production facilities.

907.2.24.1 Sound stages-solid-ceiling sets and platforms. *Where required by Chapter 48 of the California Fire Code, all interior solid-ceiling sets over 600 square feet (55.7 m^2) in area, and platforms (when provided) over 600 square feet (55.7 m^2) in area and which exceed 3 feet (914 mm) in height shall be protected by an approved heat detector system. Heat detectors shall be spaced 30 feet (9144 mm) on center or as required by the manufacturer's installation instructions. The fire alarm system shall be connected to an approved supervising station in accordance with Section 907.6.5 or a local alarm which will give an audible signal at a constantly attended location.*

907.2.24.2 Production locations—solid-ceiling sets and platforms. *Where required by Chapter 48 of the California Fire Code in buildings with existing fire protection systems and where production intends to construct solid-ceiling sets over 600 square feet (55.7 m^2) in area, and platforms over 600 square feet (55.7 m^2) in area and which exceed 3 feet (914 mm) in height shall be protected by an approved heat detector system. Heat detectors shall be spaced 30 feet (9144 mm) on center or as required by the manufacturer's installation instructions. The fire alarm system shall be connected to an approved supervising station in accordance with Section 907.6.6 or a local alarm which will give an audible signal at a constantly attended location.*

907.2.24.3 Fire alarm control units. *Fire alarm control units shall be California State Fire Marshal listed and shall be utilized in accordance with their listing. Control units are permitted to be temporarily supported by sets, platforms or pedestals.*

907.2.24.4 Heat detectors.

907.2.24.4.1 *Heat detection required by this section shall be defined as a portable system as it is intended to be reinstalled when platforms or sets are changed.*

907.2.24.4.2 *Heat detectors shall be secured to standard outlet boxes and are allowed to be temporarily supported by sets, platforms or pedestals.*

907.2.24.4.3 *Heat detectors shall be provided for solid-ceiling sets and platforms where required by Sections 4805.3 and 4811.14.*

907.2.25 Group C occupancies (organized camps).

907.2.25.1 General. *Every building and structure used or intended for sleeping purposes shall be provided with an automatic smoke detection system.*

Exceptions:

1. *Buildings and structures in existence and in operation prior to January 1, 1985.*
2. *Tents, tent structures and buildings and structures that do not exceed 25 ft (7620 mm) in any lateral dimensions and where such building or structure is not more than one story.*

907.2.25.2 Camp fire alarm. *Every organized camp shall provide and maintain audible appliances, or devices suitable for sounding a fire alarm. Such audible appliances or devices may be of any type acceptable to the enforcing agency provided they are distinctive in tone from all other signaling devices or systems and shall be audible throughout the camp premises. When an automatic fire alarm system is provided, as required by Section 450.6.6 of the California Building Code, all audible appliances required by this section shall be of the same type as that used in the automatic system.*

907.2.26 Fixed-guideway and passenger rail transit systems fire alarm and communication systems.

907.2.26.1 General. *Every fixed-guideway transit station shall be provided with an approved emergency voice/alarm communication system in accordance with NFPA 72. The emergency voice/alarm communication system, designed and installed so that damage to any one speaker will not render any paging zone of the system inoperative.*

Exception: *Open stations.*

907.2.26.2 System components. *Each station fire alarm system shall consist of:*

1. *Fire alarm control unit at a location as permitted by the enforcing agency.*
2. *An alarm annunciator(s). The annunciator(s) shall be located at a point acceptable to the enforcing agency. The annunciator(s) shall indicate the type of device and general location of alarm. All alarm, supervisory and trouble signals shall be transmitted to the local annunciator(s) and the operations control center.*
3. *Manual fire alarm boxes shall be provided throughout passenger platforms and stations.*

   Exception: *Two-way emergency communication reporting devices (emergency telephones) are allowed to be used in lieu of manual fire alarm boxes as permitted by the enforcing agency. Such devices shall provide two-way communication between the operations control center and each device. Such devices shall be located as required for manual fire alarm boxes, and shall be distinctly identified by signs, coloring or other means acceptable to the enforcing agency.*
4. *Automatic smoke detectors in all ancillary spaces.*

   Exceptions:

   1. *Ancillary spaces protected by an approved fixed automatic extinguishing system; or*
   2. *Ancillary spaces protected by quick-response sprinklers.*
5. *Automatic control of exiting components.*

907.2.26.3 Emergency voice/alarm communication system. *Each station shall be provided with an emergency voice/alarm communication system capable of transmitting voice, recorded or electronically generated textual messages to all areas of the station. The system(s) shall be configured such that the messages can be initiated from either the Emergency Management Panel (EMP) or the operations control center.*

907.2.26.4 Emergency telephones. *A dedicated two-way emergency communication phone system designed and installed in accordance with NFPA 72 shall be provided in all underground stations to facilitate direct communications for emergency response between remote locations and the EMP.*

907.2.26.4.1 *Remote emergency phones shall be located at ends of station platforms, each hose outlet connection and station valve rooms.*

907.2.26.4.2 *Provisions shall be made in the design of this two-way emergency communication phone system for extensions of the system to the next passenger station or guideway portal.*

907.2.27 Winery caves. *An approved manual fire alarm system conforming to the provisions of Section 907.2 shall be provided in all Type 3 winery caves.*

907.2.28 Group L. *A manual fire alarm system shall be installed throughout buildings having Group L occupancies. When Group L occupancies are located in mixed use buildings, at least one manual fire alarm box shall be located within the Group L occupancy.*

907.2.28.1 Group L occupancies located on the 11th story and above. *Manual fire alarm boxes shall be required on each side of the 2-hour fire-smoke barrier and at each exit on the 11th story and above.*

907.2.29 Public school state funded construction projects for kindergarten through 12th grade - automatic fire alarm system requirements.

907.2.29.1 Alterations to existing buildings on an existing public school campus. *An automatic fire alarm system shall be provided for all portions within the scope of an alteration project. The provisions of this section shall apply to any public school project on an existing campus and receiving state funds pursuant to Leroy F. Green, School Facilities Act of 1998, California Education Code Sections 17070.10 through 17079. For purposes of this section, an existing campus refers to a school site, where an application for construction of original buildings was made to DSA prior to July 1, 2002.*

Exceptions:

1. *A manual fire alarm system may be provided for a construction project that has an estimated total cost of less than $200,000.*
2. *A manual fire alarm system may be provided for a relocatable building that is sited with the intent that it be at the site for less than three years and is sited upon a temporary foundation in a manner that is designed to permit easy removal. See California Administrative Code, Section 4-314 for definition of relocatable building.*
3. *A fire alarm system is not required for detached buildings designed and used for non-instructional purposes that meet the applicable requirements for that occupancy. Buildings would include, but not be limited to:*

   Concession Stand
   Press Box
   Restroom Facilities
   Shade Structure
   Snack Bar

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Storage Building
Ticket Booth

[F] 907.3 Fire safety functions. Automatic fire detectors utilized for the purpose of performing fire safety functions shall be connected to the building's fire alarm control unit where a fire alarm system is *installed*. Detectors shall, upon actuation, perform the intended function and activate the alarm notification appliances or activate a visible and audible supervisory signal at a constantly attended location. In buildings not equipped with a fire alarm system, the automatic fire detector shall be powered by normal electrical service and, upon actuation, perform the intended function. The detectors shall be located in accordance with NFPA 72.

[F] 907.3.1 Duct smoke detectors. Smoke detectors installed in ducts shall be listed for the air velocity, temperature and humidity present in the duct. Duct smoke detectors shall be connected to the building's fire alarm control unit where a fire alarm system is required by Section 907.2. Activation of a duct smoke detector shall initiate a visible and audible supervisory signal at a constantly attended location and shall perform the intended fire safety function in accordance with this code and the *California Mechanical Code.* In facilities that are required to be monitored by a supervising station, duct smoke detectors shall report only as a supervisory signal and not as a fire alarm. They shall not be used as a substitute for required open area detection.

Exceptions:

1. The supervisory signal at a constantly attended location is not required where duct smoke detectors activate the building's alarm notification appliances.
2. In occupancies not required to be equipped with a fire alarm system, actuation of a smoke detector shall activate a visible and an audible signal in an approved location. Smoke detector trouble conditions shall activate a visible or audible signal in an approved location and shall be identified as air duct detector trouble.

[F] 907.3.2 Special locking systems. Where special locking systems are installed on means of egress doors in accordance with Sections 1010.2.12 or 1010.2.13, an automatic *smoke* detection system shall be installed as required by *those* section*s and Sections 907.3.2.1 through 907.3.2.5.*

907.3.2.1 Delayed egress. *In other than Groups I, R-2.1 and R-4 occupancies for single-story building, smoke detectors shall be installed at ceilings throughout all occupied areas and mechanical/electrical spaces. For multiple-story buildings, smoke detectors shall be installed throughout all occupied areas and mechanical/electrical spaces for the story where delayed egress devices are installed. Additional detectors are required on adjacent stories where occupants of those stories utilize the same means of egress.*

Exception: *Refer to Section 907.3.2.4 for Group A courthouse occupancies.*

907.3.2.2 Delayed egress for Group I and R-2.1 occupancies. *Smoke detectors shall be installed at ceilings throughout all occupied areas and mechanical/electrical spaces of smoke-compartments where delayed egress devices are installed. Additional detectors are required in adjacent smoke-compartments where occupants of those compartments utilize the same means of egress.*

907.3.2.3 Delayed egress for Group R-4. *Occupancies licensed as residential care facilities for the elderly, and housing clients with Alzheimer's disease or dementia residential facilities, smoke detectors shall be installed at ceilings throughout all occupiable rooms and areas and mechanical/ electrical rooms and spaces.*

907.3.2.4 Delayed egress for Group A Courthouse occupancies. *An approved automatic smoke detection system shall be installed at ceilings in all occupied corridors and mechanical/electrical spaces of occupancies where delayed egress devices are installed.*

907.3.2.5 Controlled egress doors for Group I-2 occupancies. *Smoke detectors shall be installed at ceilings throughout all occupied areas and mechanical/electrical spaces of smoke-compartments where controlled egress doors are installed.*

[F] 907.3.3 Elevator emergency operation. Automatic fire detectors installed for elevator emergency operation shall be installed in accordance with the provisions of *California Code of Regulations, Title 8, Division 1, Chapter 4, Subchapter 6, Elevator Safety Orders* and NFPA 72.

907.3.3.1 Hoist way fire detection. *Smoke detectors or other automatic fire detection shall be provided in hoist ways in accordance with NFPA 72 for the following:*

1. *Where required by California Code of Regulations, Title 8, Division 1, Chapter 4, Subchapter 6, Elevator Safety Orders, to initiate elevator phase I emergency recall.*
2. *Where required by Section 3003.4.3 to activate a hoist way ventilation system.*

[F] 907.3.4 Wiring. The wiring to the auxiliary devices and equipment used to accomplish the fire safety functions shall be monitored for integrity in accordance with NFPA 72.

[F] 907.4 Initiating devices. Where a fire alarm system is required by another section of this code, occupant notification in accordance with Section 907.5 shall be initiated by one or more of the following. Initiating devices shall be installed in accordance with Sections 907.4.1 through 907.4.3.1.

1. Manual fire alarm boxes.
2. Automatic fire detectors.
3. Automatic sprinkler system waterflow devices.
4. Automatic fire-extinguishing systems.

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[F] 907.4.1 Protection of fire alarm control unit. In areas that are not continuously occupied, a single smoke detector shall be provided at the location of each fire alarm control unit, notification appliance circuit power extenders, and supervising station transmitting equipment.

Exception: Where ambient conditions prohibit installation of a smoke detector, a heat detector shall be permitted.

[F] 907.4.2 Manual fire alarm boxes. Where a manual fire alarm system is required by another section of this code, it shall be activated by fire alarm boxes installed in accordance with Sections 907.4.2.1 through 907.4.2.6.

[F] 907.4.2.1 Location. Manual fire alarm boxes shall be located not more than 5 feet (1524 mm) from the entrance to each exit. In buildings not protected by an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2, additional manual fire alarm boxes shall be located so that the distance of travel to the nearest box does not exceed 200 feet (60 960 mm).

Exception: *When individual dwelling units are served by a single exit stairway, additional boxes at other than the ground floor may be omitted.*

[F] 907.4.2.2 Height. The height of the manual fire alarm boxes shall be not less than 42 inches (1067 mm) and not more than 48 inches (*1219* mm) measured vertically, from the floor level to the *highest point of the* activating handle or lever of the box. *Manual fire alarm boxes shall also comply with Section 11B-309.*

[F] 907.4.2.3 Color. Manual fire alarm boxes shall be red in color.

[F] 907.4.2.4 Signs. Where fire alarm systems are not monitored by an approved supervising station in accordance with Section 907.6.6, an approved permanent sign shall be installed adjacent to each manual fire alarm box that reads: WHEN ALARM SOUNDS CALL FIRE DEPARTMENT.

Exception: Where the manufacturer has permanently provided this information on the manual fire alarm box.

[F] 907.4.2.5 Protective covers. The fire code official is authorized to require the installation of listed manual fire alarm box protective covers to prevent malicious false alarms or to provide the manual fire alarm box with protection from physical damage. The protective cover shall be transparent or red in color with a transparent face to permit visibility of the manual fire alarm box. Each cover shall include proper operating instructions. A protective cover that emits a local alarm signal shall not be installed unless approved. Protective covers shall not project more than that permitted by Section 1003.3.3.

[F] 907.4.2.6 Unobstructed and unobscured. Manual fire alarm boxes shall be provided with ready access, unobstructed, unobscured and visible at all times.

907.4.2.7 Operation. *Manual fire alarm boxes shall be operable with one hand including boxes with protective covers.*

[F] 907.4.3 Automatic smoke detection. Where an automatic smoke detection system is required, it shall utilize smoke detectors unless ambient conditions prohibit such an installation. In spaces where smoke detectors cannot be utilized due to ambient conditions, approved automatic heat detectors shall be permitted.

[F] 907.4.3.1 Automatic sprinkler system. For conditions other than specific fire safety functions noted in Section 907.3, in areas where ambient conditions prohibit the installation of smoke detectors, an automatic sprinkler system installed in such areas in accordance with Section 903.3.1.1 or 903.3.1.2 and that is connected to the fire alarm system shall be approved as automatic heat detection.

[F] 907.5 Occupant notification. Occupant notification by fire alarms shall be in accordance with Sections 907.5.1 through *907.5.2.5*. Occupant notification by smoke alarms in Group R-1 and R-2 occupancies shall comply with Section 907.5.2.1.3.2.

[F] 907.5.1 Alarm activation and annunciation. Upon activation, fire alarm systems shall initiate occupant notification and shall annunciate at the fire alarm control unit, or where allowed elsewhere by Section 907, at a constantly attended location.

[F] 907.5.1.1 Presignal feature. A presignal feature shall be provided only where approved. The presignal shall be annunciated at an approved, constantly attended location, having the capability to activate the occupant notification system in the event of fire or other emergency.

Exception: *A presignal feature shall not be permitted to be installed in a Group I-2 or R-2.1 occupancy.*

[F] 907.5.2 Alarm notification appliances. Alarm notification appliances shall be provided and shall be listed for their purpose.

[F] 907.5.2.1 Audible alarms. Audible alarm notification appliances shall be provided and emit a distinctive sound that is not to be used for any purpose other than that of a fire alarm. *In Group I-2 occupancies, audible appliances located in patient areas shall be only chimes or similar sounding appliances for alerting staff. See Section 907.5.2.5.*

Exceptions:

1. Audible alarm notification appliances are not required in *patient* areas of Group I-2 occupancies that are in compliance with Section *907.5.2.5.*
2. A visible alarm notification appliance installed in a nurses' control station or other continuously attended staff location in a Group I-2 *care* suite shall be an acceptable alternative to the installation of audible alarm notification appliances throughout a *care* suite in Group I-2 occupancies that are in compliance with Section *907.5.2.5.*
3. Where provided, audible notification appliances located in each enclosed occupant evacuation elevator lobby in accordance with Section 3008.9.1 shall be connected to a separate notification zone for manual paging only.

[F] 907.5.2.1.1 Average sound pressure. The audible alarm notification appliances shall provide a sound pressure level of 15 decibels (dBA) above the average ambient sound level or 5 dBA above the maximum sound level having a duration of not less than 60 seconds, whichever is greater, in every occupiable space within the building.

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[F] 907.5.2.1.2 Maximum sound pressure. The total sound pressure level produced by combining the ambient sound pressure level with all audible notification appliances operating shall not exceed 110 dBA at the minimum hearing distance from the audible appliance. Where the average ambient noise is greater than 105 dBA, visible alarm notification appliances shall be provided in accordance with NFPA 72 and audible alarm notification appliances shall not be required.

[F] 907.5.2.1.3 Audible alarm signal frequency in Group R-1, R-2 and I-1 sleeping rooms. Audible alarm signal frequency in Group R-1, R-2 and I-1 occupancies shall be in accordance with Sections 907.5.2.1.3.1 and 907.5.2.1.3.2.

[F] 907.5.2.1.3.1 Fire alarm system audible signal. In sleeping rooms of Group R-1, R-2 and I-1 occupancies, the audible alarm signal activated by a fire alarm system shall be a 520-Hz low-frequency signal complying with NFPA 72.

[F] 907.5.2.1.3.2 Smoke alarm signal in sleeping rooms. In sleeping rooms of Group R-1, R-2 and I-1 occupancies that are required by Section 907.2.8 or 907.2.9 to have a fire alarm system, the audible alarm signal activated by single- or multiple-station smoke alarms in the dwelling unit or sleeping unit shall be a 520-Hz signal complying with NFPA 72. Where a sleeping room smoke alarm is unable to produce a 520-Hz signal, the 520-Hz alarm signal shall be provided by a listed notification appliance or a smoke detector with an integral 520-Hz sounder.

907.5.2.1.4 Audible alarm signal. *The audible signal shall be the standard fire alarm evacuation signal, ANSI S3.41 Audible Emergency Evacuation Signal, "three pulse temporal pattern," as described in NFPA 72.*

Exception: *The use of the existing evacuation signaling scheme shall be permitted where approved by the enforcing agency.*

[F] 907.5.2.2 Emergency voice/alarm communication systems. Emergency voice/alarm communication systems required by this code shall be designed and installed in accordance with NFPA 72. The operation of any automatic fire detector, sprinkler waterflow device or manual fire alarm box shall automatically sound an alert tone followed by voice instructions giving approved information and directions for a general or staged evacuation in accordance with the building's fire safety and evacuation plans required by Section 404 of the *California Fire Code*. In high-rise buildings *and Group I-2 occupancies having occupied floors located more than 75 feet above the lowest level of fire department vehicle access,* the system shall operate on at least the alarming floor, the floor above and the floor below. Speakers shall be provided throughout the building by paging zones. At a minimum, paging zones shall be provided as follows:

1. Elevator groups.
2. Interior exit stairways.
3. Each floor.
4. Areas of refuge as defined in Chapter 2.

Exception: In Group I-2 occupancies, *where in accordance with Section 907.5.2.5, audible fire alarm notification devices are not provided, upon receipt of an alarm at a constantly attended location, a general occupant notification shall be broadcast over the public-address system.*

[F] 907.5.2.2.1 Manual override. A manual override for emergency voice communication shall be provided on a selective and all-call basis for all paging zones.

[F] 907.5.2.2.2 Live voice messages. The emergency voice/alarm communication system shall have the capability to broadcast live voice messages by paging zones on a selective and all-call basis.

[F] 907.5.2.2.3 Alternative uses. The emergency voice/alarm communication system shall be allowed to be used for other announcements, provided that the manual fire alarm use takes precedence over any other use.

[F] 907.5.2.2.4 Emergency voice/alarm communication captions. Where stadiums, arenas and grandstands have 15,000 fixed seats or more and provide audible public announcements, the emergency/voice alarm communication system shall provide prerecorded or real-time captions. Prerecorded or live emergency captions shall be from an approved location constantly attended by personnel trained to respond to an emergency.

[F] 907.5.2.2.5 Standby power. Emergency voice/alarm communications systems shall be provided with standby power in accordance with Section 2702.

[F] 907.5.2.3 Visible alarms. Visible alarm notification appliances shall be provided in accordance with Sections 907.5.2.3.1 through *907.5.2.3.4*.

Exceptions:

1. *In other than Group I-2, v*isible alarm notification appliances are not required in alterations, except where an existing fire alarm system is upgraded or replaced, or a new fire alarm system is installed.
2. Visible alarm notification appliances shall not be required in *enclosed exit stairways, enclosed exit ramps, exterior exit stairs and exterior exit ramps.*
3. Visible alarm notification appliances shall not be required in elevator cars.
4. Visual alarm notification appliances are not required in critical care areas of Group I-2 occupancies that are in compliance with Section *907.5.2.5.*
5. A visible alarm notification appliance installed in a nurses' control station or other continuously attended staff location in a Group I-2 *care* suite shall be an acceptable alternative to the installation of visible alarm notification appliances throughout the *care* suite in Group I-2 occupancies that are in compliance with Section *907.5.2.5.*

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[F] 907.5.2.3.1 Public use areas and common use areas. Visible alarm notification appliances shall be provided in public use areas and common use areas*, including but not limited to:*

1. *Band rooms*
2. *Classrooms*
3. *Corridors*
4. *Gymnasiums*
5. *Lobbies*
6. *Meeting and conference rooms*
7. *Multipurpose rooms*
8. *Music practice rooms*
9. *Occupational shops*
10. *Occupied rooms where ambient noise impairs hearing of the fire alarm*
11. *Sanitary facilities including restrooms, bathrooms and shower rooms.*
12. *Shared office rooms used by two or more persons.*
13. *Normally occupied room(s) used by two or more persons such as mother's room, phone room, quiet room, wellness room, etc.*
14. *Normally occupied storage room/area.*
15. *Exam rooms in medical office buildings.*

Exception: Where employee work areas have audible alarm coverage, the notification appliance circuits serving the employee work areas shall be initially designed with not less than 20-percent spare capacity to account for the potential of adding visible notification appliances in the future to accommodate hearing-impaired employee(s).

[F] 907.5.2.3.2 Groups R-1 *and R-2.1*. Habitable spaces in dwelling units and sleeping units in Group R-1 and *R-2.1* occupancies in accordance with Table 907.5.2.3.2 shall be provided with visible alarm notification. Visible alarms shall be activated by the in-room smoke alarm and the building fire alarm system.

[F] TABLE 907.5.2.3.2—VISIBLE ALARMS

AGGREGATE NUMBER OF DWELLING UNITS AND SLEEPING UNITS	SLEEPING ACCOMMODATIONS WITH VISIBLE ALARMS
6 to 25	2
26 to 50	4
51 to 75	7
76 to 100	9
101 to 150	12
151 to 200	14
201 to 300	17
301 to 400	20
401 to 500	22
501 to 1,000	5% of total
1,001 and over	50 plus 3 for each 100 over 1,000
[SFM] *Also see Chapter 11B, Section 11B-224.4 and Table 11B-224.4.*	

[F] 907.5.2.3.3 Group R-2. In Group R-2 occupancies required by Section 907 to have a fire alarm system, each story that contains dwelling units and sleeping units shall be provided with the capability to support future visible alarm notification appliances in accordance with *NFPA 72*. Such capability shall accommodate wired or wireless equipment.

[F] 907.5.2.3.3.1 Wired equipment. Where wired equipment is used to comply with the future capability required by Section 907.5.2.3.3, the system shall include one of the following capabilities:

1. The replacement of audible appliances with combination audible/visible appliances or additional visible notification appliances.
2. The future extension of the existing wiring from the unit smoke alarm locations to required locations for visible appliances.
3. For wired equipment, the fire alarm power supply and circuits shall have not less than 5-percent excess capacity to accommodate the future addition of visible alarm notification appliances, and a single access point to such circuits shall be available on every story. Such circuits shall not be required to be extended beyond a single

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access point on a story. The fire alarm system shop drawings required by Section 907.1.2 shall include the power supply and circuit documentation to accommodate the future addition of visible notification appliances.

907.5.2.3.4 Groups R-2.1, R-3.1 and R-4. *Protective social care facilities which house persons who are hearing impaired, shall be provided with notification appliances for the hearing impaired installed in accordance with NFPA 72 and which shall activated upon initiation of the fire alarm system or the smoke alarms.*

907.5.2.4 Group E schools. *One audible alarm notification appliance shall be mounted on the exterior of a building to alert occupants at each playground area.*

907.5.2.5 Group I-2. *Audible notification appliances shall be used in nonpatient areas. Visible appliances are allowed to be used in lieu of audible appliances in patient occupied areas. Audible appliances located in patient areas shall be only chimes or similar sounding appliances for alerting staff.*

Where audible fire alarm notification devices are not provided, upon receipt of an alarm at a constantly attended location, a general occupant notification shall be broadcast over the public-address system.

In occupancies housing nonambulatory persons where restraint is practiced, staff and attendants shall be provided and housed or located in such a manner that such supervisory personnel will also be alerted upon activation of the fire alarm system or any detector required by this section.

[F] 907.6 Installation and monitoring. A fire alarm system shall be installed and monitored in accordance with Sections 907.6.1 through *907.6.6.4* and NFPA 72.

[F] 907.6.1 Wiring. Wiring shall comply with the requirements of *the California Electrical Code* and NFPA 72. Wireless protection systems utilizing radio-frequency transmitting devices shall comply with the special requirements for supervision of low-power wireless systems in NFPA 72.

907.6.1.1 High-rise buildings. *Wiring for fire alarm network communication circuits between multiple-control units shall be in accordance with the following:*

1. *Class A or Class X in accordance with NFPA 72.*
2. *Installed in enclosed continuous metallic raceways* or raceways encased in not less than 2 inches (51 mm) of concrete in *accordance with the California Electrical Code.*

[F] 907.6.2 Power supply. The primary and secondary power supply for the fire alarm system shall be provided in accordance with NFPA 72.

Exception: Back-up power for single-station and multiple-station smoke alarms as required in Section 907.2.11.6.

[F] 907.6.3 Initiating device identification. The fire alarm system shall identify the specific initiating device address, location, device type, floor level where applicable and status including indication of normal, alarm, trouble and supervisory status, as appropriate.

Exceptions:

1. Fire alarm systems in single-story buildings less than 22,500 square feet (2090 m^2) in area.
2. Fire alarm systems that only include manual fire alarm boxes, waterflow initiating devices and not more than 10 additional alarm-initiating devices.
3. Special initiating devices that do not support individual device identification.
4. Fire alarm systems or devices that are replacing existing equipment.

[F] 907.6.3.1 Annunciation. The initiating device status shall be annunciated at an approved on-site location.

[F] 907.6.4 Zones. *Fire alarm systems shall be divided into zones where required by this section. For the purposes of annunciation and notification, zoning shall be in accordance with the following:*

1. *Where the fire-protective signaling system serves more than one building, each building shall be considered as a separate zone.*
2. *Each floor of a building shall be considered as a separate zone.*
3. *Each section of floor of a building that is separated by fire walls or by horizontal exits shall be considered as a separate zone.*
4. *Each zone shall not exceed 22,500 square feet (2090 m^2). The length of any zone shall not exceed 300 feet (91 440 mm) in any direction.*

   Exception: Automatic sprinkler system zones shall not exceed the area permitted by NFPA 13.
5. *For Group I-3 occupancies each cell complex shall be considered a separate zone.*
6. *For Group H and L occupancies* on the 11th story and above, *each side of the 2-hour fire-smoke barrier shall be considered a separate zone.*
7. *Annunciation shall be further divided into zones where deemed necessary by the enforcing agency.*

907.6.4.1 Annunciation. *Alarm, supervisory and trouble signals shall be annunciated in the main control unit by means of an audible signal and a visual display in accordance with NFPA 72. Identification of the type of alarm and supervisory initiating devices, such as manual, automatic, sprinkler waterflow, sprinkler valve supervisory, fire-pump supervisory, etc., shall be separately indicated.*

Exception: *Group R-3 occupancies.*

***[F] 907.6.4.1.1 Annunciator* panel.** A*n annunciator* panel *complying with Section 907.6.4.1* and the associated controls shall be provided in an approved *remote* location *where deemed necessary by the enforcing agency*. The visual zone indication shall lock in until the system is reset and shall not be canceled by the operation of an audible-alarm silencing switch.

[F] 907.6.4.2 High-rise buildings. In high-rise buildings *and Group I-2 occupancies having occupied floors located more than 75 feet above the lowest level of fire department vehicle access*, a separate zone by floor shall be provided for each of the following types of alarm-initiating devices where provided:

1. Smoke detectors.
2. Sprinkler waterflow devices.
3. Manual fire alarm boxes.
4. Other approved types of automatic fire protection systems.

907.6.4.3 High-rise buildings zoning annunciator panel. *In high-rise buildings, a zoning annunciator panel shall be provided in the Fire Command Center. This panel shall not be combined with the Firefighter Smoke Control Panel unless approved. Panel shall be in matrix format or an approved equivalent configuration. All indicators shall be based upon positive confirmation. The panel shall include the following features at a minimum:*

1. *Fire alarm initiating devices with individual annunciation per floor for manual fire alarm boxes, area smoke detectors, elevator lobby smoke detectors, duct smoke detectors, heat detectors, auxiliary alarms and sprinkler waterflow. (Red LED)*
2. *Sprinkler and standpipe system control valves per floor—supervisory. (Yellow LED)*
3. *Common fire alarm system trouble. (Yellow LED)*
4. *Annunciation Panel Power On. (Green LED)*
5. *Lamp test. (Push Button)*

907.6.4.4 Notification zoning. *Upon activation of initiating devices where occupant notification is required for evacuation, all notification zones shall operate simultaneously throughout the building.*

Exceptions:

1. *High-rise buildings as permitted in Section 907.2.13.*
2. *Hospitals and convalescent facilities with staff alerting notification appliances or emergency voice/alarm communication, zoning shall be in accordance with the approved fire plan.*
3. *Detention facilities.*
4. *Upon approval by the fire code official in buildings which are sprinklered throughout, specific notification zoning shall be permitted where the notification zones are separated by a minimum of a 2-hour fire barrier and 2-hour fire-resistive floor assembly. The system shall have the capability to activate all other notification zones by automatic and manual means.*
5. *Upon approval by the fire code official in buildings which are sprinklered throughout, specific notification zoning shall be permitted where the activated initiating device or fire extinguishing system is separated from any nonactive notification zones by a minimum of 300-ft horizontal distance. The system shall have the capability to activate all other notification zones by automatic and manual means.*
6. *Where a Group H or L occupancy is located above the 10th story, each side of the 2-hour fire-smoke barrier shall be considered a separate zone.*

[F] 907.6.5 Access. Access shall be provided to each fire alarm device and notification appliance for periodic inspection, maintenance and testing.

[F] 907.6.6 Monitoring. Fire alarm systems required by this chapter or by the *California Fire Code* shall be monitored by an approved supervising station in accordance with NFPA 72 *and this section*.

Exception: Monitoring by a supervising station is not required for:

1. Single- and multiple-station smoke alarms required by Section 907.2.11.
2. Smoke detectors in Group I-3 occupancies *shall be monitored in accordance with Section 907.2.6.3.*
3. Automatic sprinkler systems in one- and two-family dwellings.

[F] 907.6.6.1 Transmission of alarm signals. Transmission of alarm signals to a supervising station shall be in accordance with NFPA 72.

[F] 907.6.6.2 MIY Monitoring. Direct transmission of alarms associated with monitor it yourself (MIY) transmitters to a public safety answering point (PSAP) shall not be permitted unless approved by the fire code official.

[F] 907.6.6.3 Termination of monitoring service. Termination of fire alarm monitoring services shall be in accordance with Section 901.9 of the *California Fire Code*.

907.6.6.4 Group E schools. *Automatic fire alarm systems shall be monitored and shall transmit the alarm, supervisory and trouble signals to an approved supervising station in accordance with NFPA 72. The supervising station shall be listed as either UUFX (Central Station) or UUJS (remote & proprietary) by the Underwriters Laboratory Inc. (UL) or other approved listing and testing laboratory or shall comply with the requirements of standard, FM 3011. Termination of monitoring services shall be in accordance with Section 907.6.6.3.*

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[F] 907.7 Acceptance tests and completion. Upon completion of the installation, the fire alarm system and all fire alarm components shall be tested in accordance with NFPA 72.

[F] 907.7.1 Single- and multiple-station alarm devices. When the installation of the alarm devices is complete, each device and interconnecting wiring for multiple-station alarm devices shall be tested in accordance with the smoke alarm provisions of NFPA 72.

[F] 907.7.2 Record of completion. A record of completion in accordance with NFPA 72 verifying that the system has been installed and tested in accordance with the approved plans and specifications shall be provided.

[F] 907.7.3 Instructions. Operating, testing and maintenance instructions and record drawings ("as-builts") and equipment specifications shall be provided at an approved location.

[F] 907.8 Inspection, testing and maintenance. The maintenance and testing schedules and procedures for fire alarm and fire detection systems shall be in accordance with Section 907.8 of the *California Fire Code*.

SECTION 908—EMERGENCY ALARM SYSTEMS

[F] 908.1 Group H occupancies. Emergency alarms for the detection and notification of an emergency condition in Group H occupancies shall be provided in accordance with Section 415.5.

[F] 908.2 Group H-5 occupancy. Emergency alarms for notification of an emergency condition in an HPM facility shall be provided as required in Section 415.11.4.

[F] 908.3 Fire alarm system interface. Where an emergency alarm system is interfaced with a building's fire alarm system, the signal produced at the fire alarm control unit shall be a supervisory signal.

SECTION 909—SMOKE CONTROL SYSTEMS

[F] 909.1 Scope and purpose. This section applies to mechanical or passive smoke control systems where they are required by other provisions of this code. The purpose of this section is to establish minimum requirements for the design, installation and acceptance testing of smoke control systems that are intended to provide a tenable environment for the evacuation or relocation of occupants. These provisions are not intended for the preservation of contents, the timely restoration of operations or for assistance in fire suppression or overhaul activities. Smoke control systems regulated by this section serve a different purpose than the smoke- and heat-removal provisions found in Section 910. Mechanical smoke control systems shall not be considered exhaust systems under Chapter 5 of the *California Mechanical Code*.

[F] 909.2 General design requirements. Buildings, structures or parts thereof required by this code to have a smoke control system or systems shall have such systems designed in accordance with the applicable requirements of Section 909 and the generally accepted and well-established principles of engineering relevant to the design. The construction documents shall include sufficient information and detail to adequately describe the elements of the design necessary for the proper implementation of the smoke control systems. These documents shall be accompanied by sufficient information and analysis to demonstrate compliance with these provisions.

[F] 909.3 Special inspection and test requirements. In addition to the ordinary inspection and test requirements that buildings, structures and parts thereof are required to undergo, smoke control systems subject to the provisions of Section 909 shall undergo special inspections and tests sufficient to verify the proper commissioning of the smoke control design in its final installed condition. The design submission accompanying the construction documents shall clearly detail procedures and methods to be used and the items subject to such inspections and tests. Such commissioning shall be in accordance with generally accepted engineering practice and, where possible, based on published standards for the particular testing involved. The special inspections and tests required by this section shall be conducted under the same terms in Section 1704.

[F] 909.4 Analysis. A rational analysis supporting the types of smoke control systems to be employed, their methods of operation, the systems supporting them and the methods of construction to be utilized shall accompany the submitted construction documents and shall include, but not be limited to, the items indicated in Sections 909.4.1 through 909.4.7.

[F] 909.4.1 Stack effect. The system shall be designed such that the maximum probable normal or reverse stack effect will not adversely interfere with the system's capabilities. In determining the maximum probable stack effect, altitude, elevation, weather history and interior temperatures shall be used.

[F] 909.4.2 Temperature effect of fire. Buoyancy and expansion caused by the design fire in accordance with Section 909.9 shall be analyzed. The system shall be designed such that these effects do not adversely interfere with the system's capabilities.

[F] 909.4.3 Wind effect. The design shall consider the adverse effects of wind. Such consideration shall be consistent with the wind-loading provisions of Chapter 16.

[F] 909.4.4 HVAC systems. The design shall consider the effects of the heating, ventilating and air-conditioning (HVAC) systems on both smoke and fire transport. The analysis shall include all permutations of systems status. The design shall consider the effects of the fire on the HVAC systems.

[F] 909.4.5 Climate. The design shall consider the effects of low temperatures on systems, property and occupants. Air inlets and exhausts shall be located so as to prevent snow or ice blockage.

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[F] 909.4.6 Duration of operation. All portions of active or engineered smoke control systems shall be capable of continued operation after detection of the fire event for a period of not less than either 20 minutes or 1.5 times the calculated egress time, whichever is greater.

[F] 909.4.7 Smoke control system interaction. The design shall consider the interaction effects of the operation of multiple smoke control systems for all design scenarios.

[F] 909.5 Smoke barrier construction. Smoke barriers required for passive smoke control and a smoke control system using the pressurization method shall comply with Section 709. The maximum allowable leakage area shall be the aggregate area calculated using the following leakage area ratios:

1. Walls $A/A_w = 0.00100$
2. Interior exit stairways and ramps and exit passageways: $A/A_w = 0.00035$
3. Enclosed exit access stairways and ramps and all other shafts: $A/A_w = 0.00150$
4. Floors and roofs: $A/A_F = 0.00050$

where:

A = Total leakage area, square feet (m^2).

A_F = Unit floor or roof area of barrier, square feet (m^2).

A_w = Unit wall area of barrier, square feet (m^2).

The leakage area ratios shown do not include openings due to gaps around doors and operable windows. The total leakage area of the smoke barrier shall be determined in accordance with Section 909.5.1 and tested in accordance with Section 909.5.2.

[F] 909.5.1 Total leakage area. Total leakage area of the barrier is the product of the smoke barrier gross area multiplied by the allowable leakage area ratio, plus the area of other openings such as gaps around doors and operable windows.

[F] 909.5.2 Testing of leakage area. Compliance with the maximum total leakage area shall be determined by achieving the minimum air pressure difference across the barrier with the system in the smoke control mode for mechanical smoke control systems utilizing the pressurization method. Compliance with the maximum total leakage area of passive smoke control systems shall be verified through methods such as door fan testing or other methods, as approved by the fire code official.

[F] 909.5.3 Opening protection. Openings in smoke barriers shall be protected by automatic-closing devices actuated by the required controls for the mechanical smoke control system. Door openings shall be protected by fire door assemblies complying with Section 716.

Exceptions:

1. Passive smoke control systems with automatic-closing devices actuated by spot-type smoke detectors listed for releasing service installed in accordance with Section 907.3. *When used in Group I-2, such detectors shall activate the fire alarm system and shall close all the smoke barrier doors within the effected zone.*
2. Fixed openings between smoke zones that are protected utilizing the airflow method *in other than Group I-2.*
3. In Group I-2, *R-2.1* and ambulatory care facilities, where a pair of opposite-swinging doors are installed across a corridor in accordance with Section 909.5.3.1, the doors shall be protected in accordance with Section 716. The doors shall not have a center mullion. *Positive-latching devices are required. Doors installed across corridors shall comply with Section 1010.1.1.*
4. In Group I-2, *R-2.1* and ambulatory care facilities, where such doors are special-purpose horizontal sliding, accordion or folding door assemblies installed in accordance with Section 1010.3.3 and are automatic closing by smoke detection in accordance with Section 716.2.6.6, *they shall be protected in accordance with Section 716. Doors installed across corridors shall comply with Section 1010.1.1.*
5. Group I-3.
6. Openings between smoke zones with clear ceiling heights of 14 feet (4267 mm) or greater and bank-down capacity of greater than 20 minutes as determined by the design fire size.
7. *In Group I-2, smoke damper activation may be accomplished by a fire alarm control unit provided that an open area smoke detection system is provided within all areas served by an HVAC system.*

[F] 909.5.3.1 Group I-2, *R-2.1* and ambulatory care facilities. In Group I-2, *R-2.1* and ambulatory care facilities, where doors are installed across a corridor, the doors shall be automatic closing by smoke detection in accordance with Section 716.2.6.6 and shall have a vision panel with fire-protection-rated glazing materials in fire protection-rated frames, the area of which shall not exceed that tested. *Vision panels consisting of fire-rated glazing in approved frames shall be provided in each cross-corridor swinging door and at each cross-corridor horizontal-sliding door in a smoke barrier. In Group I-2, where swinging doors are installed across a corridor, such doors shall be opposite swinging pairs.*

[F] 909.5.3.2 Ducts and air transfer openings. Ducts and air transfer openings are required to be protected with a minimum Class II, 250°F (121°C) smoke damper complying with Section 717.

[F] 909.6 Pressurization method. The primary mechanical means of controlling smoke shall be by pressure differences across smoke barriers. Maintenance of a tenable environment is not required in the smoke control zone of fire origin.

[F] 909.6.1 Minimum pressure difference. The pressure difference across a smoke barrier used to separate smoke zones shall be not less than 0.05-inch water gage (0.0124 kPa) in buildings equipped throughout with automatic sprinkler systems.

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In buildings permitted to be not equipped throughout with automatic sprinkler systems, the smoke control system shall be designed to achieve pressure differences not less than two times the maximum calculated pressure difference produced by the design fire.

[F] 909.6.2 Maximum pressure difference. The maximum air pressure difference across a smoke barrier shall be determined by required door-opening or closing forces. The actual force required to open exit doors when the system is in the smoke control mode shall be in accordance with Section 1010.1.3. Opening and closing forces for other doors shall be determined by standard engineering methods for the resolution of forces and reactions. The calculated force to set a side-hinged, swinging door in motion shall be determined by:

Equation 9-1 $F = F_{dc} + K(WA\Delta P)/2(W\text{-}d)$

where:

A = Door area, square feet (m^2).

d = Distance from door handle to latch edge of door, feet (m).

F = Total door opening force, pounds (N).

F_{dc} = Force required to overcome closing device, pounds (N).

K = Coefficient 5.2 (1.0).

W = Door width, feet (m).

ΔP = Design pressure difference, inches of water (Pa).

[F] 909.6.3 Pressurized stairways and elevator hoistways. Where stairways or elevator hoistways are pressurized, such pressurization systems shall comply with Section 909 as smoke control systems, in addition to the requirements of Sections 909.20 of this code and 909.21 of the *California Fire Code*.

[F] 909.7 Airflow design method. Where approved by the fire code official, smoke migration through openings fixed in a permanently open position, which are located between smoke control zones by the use of the airflow method, shall be permitted. The design airflow shall be in accordance with this section. Airflow shall be directed to limit smoke migration from the fire zone. The geometry of openings shall be considered to prevent flow reversal from turbulent effects. Smoke control systems using the airflow method shall be designed in accordance with NFPA 92.

[F] 909.7.1 Prohibited conditions. This method shall not be employed where either the quantity of air or the velocity of the airflow will adversely affect other portions of the smoke control system, unduly intensify the fire, disrupt plume dynamics or interfere with exiting. Airflow toward the fire shall not exceed 200 feet per minute (1.02 m/s). Where the calculated airflow exceeds this limit, the airflow method shall not be used.

[F] 909.8 Exhaust method. Where approved by the fire code official, mechanical smoke control for large enclosed volumes, such as in atriums or malls, shall be permitted to utilize the exhaust method. Smoke control systems using the exhaust method shall be designed in accordance with NFPA 92.

[F] 909.8.1 Smoke layer. The height of the lowest horizontal surface of the smoke layer interface shall be maintained not less than 6 feet (1829 mm) above a walking surface that forms a portion of a required egress system within the smoke zone.

[F] 909.9 Design fire. The design fire shall be based on a rational analysis performed by the registered design professional and approved by the fire code official. The design fire shall be based on the analysis in accordance with Section 909.4 and this section.

[F] 909.9.1 Factors considered. The engineering analysis shall include the characteristics of the fuel, fuel load, effects included by the fire and whether the fire is likely to be steady or unsteady.

[F] 909.9.2 Design fire fuel. Determination of the design fire shall include consideration of the type of fuel, fuel spacing and configuration.

[F] 909.9.3 Heat-release assumptions. The analysis shall make use of best available data from approved sources and shall not be based on excessively stringent limitations of combustible material.

[F] 909.9.4 Sprinkler effectiveness assumptions. A documented engineering analysis shall be provided for conditions that assume fire growth is halted at the time of sprinkler activation.

[F] 909.10 Equipment. Equipment including, but not limited to, fans, ducts, automatic dampers and balance dampers, shall be suitable for its intended use, suitable for the probable exposure temperatures that the rational analysis indicates and as approved by the fire code official.

[F] 909.10.1 Exhaust fans. Components of exhaust fans shall be rated and certified by the manufacturer for the probable temperature rise to which the components will be exposed. This temperature rise shall be computed by:

Equation 9-2 $T_s = (Q_c/mc) + (T_a)$

where:

c = Specific heat of smoke at smoke layer temperature, Btu/lb°F (kJ/kg × K).

m = Exhaust rate, pounds per second (kg/s).

Q_c = Convective heat output of fire, Btu/s (kW).

T_a = Ambient temperature, °F (K).

T_s = Smoke temperature, °F (K).

Exception: Reduced T_s as calculated based on the assurance of adequate dilution air.

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[F] 909.10.2 Ducts. Duct materials and joints shall be capable of withstanding the probable temperatures and pressures to which they are exposed as determined in accordance with Section 909.10.1. Ducts shall be constructed and supported in accordance with the *California Mechanical Code*. Ducts shall be leak tested to 1.5 times the maximum design pressure in accordance with nationally accepted practices. Measured leakage shall not exceed 5 percent of design flow. Results of such testing shall be a part of the documentation procedure. Ducts shall be supported directly from fire-resistance-rated structural elements of the building by substantial, noncombustible supports.

Exception: Flexible connections, for the purpose of vibration isolation, complying with the *California Mechanical Code* and that are constructed of approved fire-resistance-rated materials.

[F] 909.10.3 Equipment, inlets and outlets. Equipment shall be located so as to not expose uninvolved portions of the building to an additional fire hazard. Outside air inlets shall be located so as to minimize the potential for introducing smoke or flame into the building. Exhaust outlets shall be so located as to minimize reintroduction of smoke into the building and to limit exposure of the building or adjacent buildings to an additional fire hazard.

[F] 909.10.4 Automatic dampers. Automatic dampers, regardless of the purpose for which they are installed within the smoke control system, shall be listed and conform to the requirements of approved, recognized standards.

[F] 909.10.5 Fans. In addition to other requirements, belt-driven fans shall have 1.5 times the number of belts required for the design duty, with the minimum number of belts being two. Fans shall be selected for stable performance based on normal temperature and, where applicable, elevated temperature. Calculations and manufacturer's fan curves shall be part of the documentation procedures. Fans shall be supported and restrained by noncombustible devices in accordance with the requirements of Chapter 16.

Motors driving fans shall not be operated beyond their nameplate horsepower (kilowatts), as determined from measurement of actual current draw, and shall have a minimum service factor of 1.15.

[F] 909.11 Standby power. Smoke control systems shall be provided with standby power in accordance with Section 2702.

[F] 909.11.1 Equipment room. The standby power source and its transfer switches shall be in a room separate from the normal power transformers and switch gears and ventilated directly to and from the exterior. The room shall be enclosed with not less than 1-hour fire barriers constructed in accordance with Section 707 or horizontal assemblies constructed in accordance with Section 711, or both.

[F] 909.11.2 Power sources and power surges. Elements of the smoke control system relying on volatile memories or the like shall be supplied with uninterruptable power sources of sufficient duration to span 15-minute primary power interruption. Elements of the smoke control system susceptible to power surges shall be suitably protected by conditioners, suppressors or other approved means.

[F] 909.12 Detection and control systems. Fire detection systems providing control input or output signals to mechanical smoke control systems or elements thereof shall comply with the requirements of Section 907. Such systems shall be equipped with a control unit complying with UL 864 and listed as smoke control equipment.

[F] 909.12.1 Verification. Control systems for mechanical smoke control systems shall include provisions for verification. Verification shall include positive confirmation of actuation, testing, manual override and the presence of power downstream of all disconnects. A preprogrammed weekly test sequence shall report abnormal conditions audibly, visually and by printed report. The preprogrammed weekly test shall operate all devices, equipment and components used for smoke control.

The status of dampers shall be determined using limit or proximity switches installed at the damper or incorporated into the damper actuator. Where multiple dampers are grouped together in an assembly requiring one or more actuators, each damper shall be independently controlled by a separate actuator and provided with an individual limit or proximity switch, or the dampers shall be linked together by a reliable and durable mechanical or otherwise permanent means into one or more groups, with each group provided with a common limit or proximity switch.

The status of fans shall be determined by sensing the air flow downstream of the fans using pressure differential switches or transmitters, or by other means of positive proof of air flow where approved by the enforcing authority.

Exception: Where verification of individual components tested through the preprogrammed weekly testing sequence will interfere with, and produce unwanted effects to, normal building operation, such individual components are permitted to be bypassed from the preprogrammed weekly testing, where approved by the building official and in accordance with both of the following:

1. Where the operation of components is bypassed from the preprogrammed weekly test, presence of power downstream of all disconnects shall be verified weekly by a listed control unit.
2. Testing of all components bypassed from the preprogrammed weekly test shall be in accordance with Section 909.22.6 of the *California Fire Code*.

[F] 909.12.2 Wiring. In addition to meeting requirements of *the California Electrical Code*, all wiring, regardless of voltage, shall be fully enclosed within continuous raceways.

[F] 909.12.3 Activation. Smoke control systems shall be activated in accordance with this section.

[F] 909.12.3.1 Pressurization, airflow or exhaust method. Mechanical smoke control systems using the pressurization, airflow or exhaust method shall have completely automatic control.

[F] 909.12.3.2 Passive method. Passive smoke control systems actuated by approved spot-type detectors listed for releasing service shall be permitted.

[F] 909.12.4 Automatic control. Where completely automatic control is required or used, the automatic-control sequences shall be initiated from an appropriately zoned automatic sprinkler system complying with Section 903.3.1.1, manual controls provided with ready access for the fire department and any smoke detectors required by engineering analysis.

[F] 909.13 Control air tubing. Control air tubing shall be of sufficient size to meet the required response times. Tubing shall be flushed clean and dry prior to final connections and shall be adequately supported and protected from damage. Tubing passing through concrete or masonry shall be sleeved and protected from abrasion and electrolytic action.

[F] 909.13.1 Materials. Control-air tubing shall be hard-drawn copper, Type L, ACR in accordance with ASTM B42, ASTM B43, ASTM B68/B68M, ASTM B88, ASTM B251 and ASTM B280. Fittings shall be wrought copper or brass, solder type in accordance with ASME B16.18 or ASME B16.22. Changes in direction shall be made with appropriate tool bends. Brass compression-type fittings shall be used at final connection to devices; other joints shall be brazed using a BCuP-5 brazing alloy with solidus above 1,100°F (593°C) and liquids below 1,500°F (816°C). Brazing flux shall be used on copper-to-brass joints only.

Exception: Nonmetallic tubing used within control panels and at the final connection to devices provided that all of the following conditions are met:

1. Tubing shall comply with the requirements of *Chapter 6* of the *California Mechanical Code*.
2. Tubing and connected devices shall be completely enclosed within a galvanized or paint-grade steel enclosure having a minimum thickness of 0.0296 inch (0.7534 mm) (No. 22 gage). Entry to the enclosure shall be by copper tubing with a protective grommet of neoprene or Teflon or by suitable brass compression to male barbed adapter.
3. Tubing shall be identified by appropriately documented coding.
4. Tubing shall be neatly tied and supported within the enclosure. Tubing bridging cabinets and doors or moveable devices shall be of sufficient length to avoid tension and excessive stress. Tubing shall be protected against abrasion. Tubing connected to devices on doors shall be fastened along hinges.

[F] 909.13.2 Isolation from other functions. Control tubing serving other than smoke control functions shall be isolated by automatic isolation valves or shall be an independent system.

[F] 909.13.3 Testing. Control air tubing shall be tested at three times the operating pressure for not less than 30 minutes without any noticeable loss in gauge pressure prior to final connection to devices.

[F] 909.14 Marking and identification. The detection and control systems shall be clearly marked at all junctions, accesses and terminations.

[F] 909.15 Control diagrams. Identical control diagrams showing all devices in the system and identifying their location and function shall be maintained current and kept on file with the fire code official, the fire department and in the fire command center in a format and manner approved by the fire code official.

[F] 909.16 Firefighter's smoke control panel. A firefighter's smoke control panel for fire department emergency response purposes only shall be provided and shall include manual control or override of automatic control for mechanical smoke control systems. The panel shall be located in a fire command center complying with Section 911 in high-rise buildings *Group I-2 occupancies having occupied floors located more than 75 feet above the lowest level of fire department vehicle access* or buildings with smoke-protected assembly seating. In all other buildings, the firefighter's smoke control panel shall be installed in an approved location adjacent to the fire alarm control panel. The firefighter's smoke control panel shall comply with Sections 909.16.1 through 909.16.3.

[F] 909.16.1 Smoke control systems. Fans within the building shall be shown on the firefighter's control panel. A clear indication of the direction of airflow and the relationship of components shall be displayed. Status indicators shall be provided for all smoke control equipment, annunciated by fan and zone, and by *approved* pilot-lamp-type indicators as follows:

1. Fans, dampers and other operating equipment in their normal status—WHITE.
2. Fans, dampers and other operating equipment in their off or closed status—RED.
3. Fans, dampers and other operating equipment in their on or open status—GREEN.
4. Fans, dampers and other operating equipment in a fault status—YELLOW/AMBER.

[F] 909.16.2 Smoke control panel. The firefighter's control panel shall provide control capability over the complete smoke control system equipment within the building as follows:

1. ON-AUTO-OFF control over each individual piece of operating smoke control equipment that can be controlled from other sources within the building. This includes stairway pressurization fans; smoke exhaust fans; supply, return and exhaust fans; elevator shaft fans and other operating equipment used or intended for smoke control purposes.
2. OPEN-AUTO-CLOSE control over individual dampers relating to smoke control and that are controlled from other sources within the building.
3. ON-OFF or OPEN-CLOSE control over smoke control and other critical equipment associated with a fire or smoke emergency and that can only be controlled from the firefighter's control panel.

Exceptions:

1. Complex systems, where approved, where the controls and indicators are combined to control and indicate all elements of a single smoke zone as a unit.

2. Complex systems, where approved, where the control is accomplished by computer interface using approved, plain English commands.

[F] 909.16.3 Control action and priorities. The firefighter's control panel actions shall be as follows:

1. ON-OFF and OPEN-CLOSE control actions shall have the highest priority of any control point within the building. Once issued from the firefighter's control panel, automatic or manual control from any other control point within the building shall not contradict the control action. Where automatic means are provided to interrupt normal, nonemergency equipment operation or produce a specific result to safeguard the building or equipment including, but not limited to, duct freezestats, duct smoke detectors, high-temperature cutouts, temperature-actuated linkage and similar devices, such means shall be capable of being overridden by the firefighter's control panel. The last control action as indicated by each firefighter's control panel switch position shall prevail. Control actions shall not require the smoke control system to assume more than one configuration at any one time.

   Exception: Power disconnects required by *the California Electrical Code.*

2. Only the AUTO position of each three-position firefighter's control panel switch shall allow automatic or manual control action from other control points within the building. The AUTO position shall be the NORMAL, nonemergency, building control position. Where a firefighter's control panel is in the AUTO position, the actual status of the device (on, off, open, closed) shall continue to be indicated by the status indicator described in Section 909.16.1. Where directed by an automatic signal to assume an emergency condition, the NORMAL position shall become the emergency condition for that device or group of devices within the zone. Control actions shall not require the smoke control system to assume more than one configuration at any one time.

[F] 909.17 System response time. Smoke-control system activation shall be initiated immediately after receipt of an appropriate automatic or manual activation command. Smoke control systems shall activate individual components (such as dampers and fans) in the sequence necessary to prevent physical damage to the fans, dampers, ducts and other equipment. For purposes of smoke control, the firefighter's control panel response time shall be the same for automatic or manual smoke control action initiated from any other building control point. The total response time, including that necessary for detection, shutdown of operating equipment and smoke control system startup, shall allow for full operational mode to be achieved before the conditions in the space exceed the design smoke condition. Upon receipt of an alarm condition at the fire alarm control panel, fans, dampers and automatic doors shall have achieved their proper operating state and the final status shall be indicated at the smoke control panel within 90 seconds. The system response time for each component and their sequential relationships shall be detailed in the required rational analysis and verification of their installed condition reported in the required final report.

[F] 909.18 Acceptance testing. Devices, equipment, components and sequences shall be individually tested. These tests, in addition to those required by other provisions of this code, shall consist of determination of function, sequence and, where applicable, capacity of their installed condition.

[F] 909.18.1 Detection devices. Smoke or fire detectors that are a part of a smoke control system shall be tested in accordance with Chapter 9 in their installed condition. Where applicable, this testing shall include verification of airflow in both minimum and maximum conditions.

[F] 909.18.2 Ducts. Ducts that are part of a smoke control system shall be traversed using generally accepted practices to determine actual air quantities.

[F] 909.18.3 Dampers. Dampers shall be tested for function in their installed condition in accordance with NFPA 80 and NFPA 105.

[F] 909.18.4 Inlets and outlets. Inlets and outlets shall be read using generally accepted practices to determine air quantities.

[F] 909.18.5 Fans. Fans shall be examined for correct rotation. Measurements of voltage, amperage, revolutions per minute (rpm) and belt tension shall be made.

[F] 909.18.6 Smoke barriers. Measurements using inclined manometers or other approved calibrated measuring devices shall be made of the pressure differences across smoke barriers. Such measurements shall be conducted for each possible smoke control condition.

[F] 909.18.7 Controls. Each smoke zone equipped with an automatic-initiation device shall be put into operation by the actuation of one such device. Each additional device within the zone shall be verified to cause the same sequence without requiring the operation of fan motors in order to prevent damage. Control sequences shall be verified throughout the system, including verification of override from the firefighter's control panel and simulation of standby power conditions.

[F] 909.18.8 Testing for smoke control. Smoke control systems shall be tested by a special inspector in accordance with Section 1705.19.

[F] 909.18.8.1 Scope of testing. Testing shall be conducted in accordance with the following:

1. During erection of ductwork and prior to concealment for the purposes of leakage testing and recording of device location.
2. Prior to occupancy and after sufficient completion for the purposes of pressure-difference testing, flow measurements, and detection and control verification.

[F] 909.18.8.2 Qualifications. Approved agencies for smoke control testing shall have expertise in fire protection engineering, mechanical engineering and certification as air balancers.

[F] 909.18.8.3 Reports. A complete report of testing shall be prepared by the approved agency. The report shall include identification of all devices by manufacturer, nameplate data, design values, measured values and identification tag or mark. The report shall be reviewed by the responsible registered design professional and, when satisfied that the design intent has been achieved, the responsible registered design professional shall sign, seal and date the report.

[F] 909.18.8.3.1 Report filing. A copy of the final report shall be filed with the fire code official and an identical copy shall be maintained in an approved location at the building.

[F] 909.18.9 Identification and documentation. Charts, drawings and other documents identifying and locating each component of the smoke control system, and describing its proper function and maintenance requirements, shall be maintained on file at the building as an attachment to the report required by Section 909.18.8.3. Devices shall have an approved identifying tag or mark on them consistent with the other required documentation and shall be dated indicating the last time they were successfully tested and by whom.

An approved operations manual describing the complete operations of the smoke control system and functioning of the firefighters smoke control panel shall be maintained at the fire command center.

[F] 909.19 System acceptance. Buildings, or portions thereof, required by this code to comply with this section shall not be issued a certificate of occupancy until such time that the fire code official determines that the provisions of this section have been fully complied with and that the fire department has received satisfactory instruction on the operation, both automatic and manual, of the system and a written maintenance program complying with the requirements of Section 909.20.1 of the *California Fire Code* has been submitted and approved by the fire code official.

Exception: In buildings of phased construction, a temporary certificate of occupancy, as approved by the fire code official, shall be allowed provided that those portions of the building to be occupied meet the requirements of this section and that the remainder does not pose a significant hazard to the safety of the proposed occupants or adjacent buildings.

909.20 Smokeproof enclosures. Where required by Section 1023.12, a smokeproof enclosure shall be constructed in accordance with this section. A smokeproof enclosure shall consist of an interior exit stairway or ramp that is enclosed in accordance with the applicable provisions of Section 1023 and an open exterior balcony or pressurized stair and pressurized entrance vestibule meeting the requirements of this section. Where access to the roof is required by the *California Fire Code*, such access shall be from the smokeproof enclosure where a smokeproof enclosure is required.

909.20.1 Access. Access to the stairway or ramp shall be by way of a vestibule or an open exterior balcony. The minimum dimension of the vestibule shall be not less than the required clear width of the corridor leading to the vestibule *calculated in accordance with Section 1005.1,* but shall not have a width of less than 44 inches (1118 mm) and shall not have a length of less than 72 inches (1829 mm) in the direction of egress travel into the stairway, measured in a straight line between the centerline of the doorways into the vestibule and stairway.

909.20.2 Construction. The smokeproof enclosure shall be separated from the remainder of the building by not less than 2-hour fire barriers constructed in accordance with Section 707 or horizontal assemblies constructed in accordance with Section 711, or both. Openings are not permitted other than the required means of egress doors. The vestibule shall be separated from the stairway or ramp by not less than 2-hour fire barriers constructed in accordance with Section 707 or horizontal assemblies constructed in accordance with Section 711, or both. The open exterior balcony shall be constructed in accordance with the fire-resistance rating requirements for floor assemblies.

909.20.2.1 Door closers. Doors in a smokeproof enclosure shall be self- or automatic closing by actuation of a smoke detector in accordance with Section 716.2.6.6 and shall be installed at the floor-side entrance to the smokeproof enclosure. The actuation of the smoke detector on any door shall activate the closing devices on all doors in the smokeproof enclosure at all levels. Smoke detectors shall be installed in accordance with Section 907.3.

909.20.2.2 Vestibule doors. *Where access to the stairway is by way of a vestibule, the door assembly from the building into the vestibule shall be a 90-minute fire door assembly complying with Section 716.5.5. The door assembly from the vestibule to the stairway shall have not less than a 20-minute fire protection rating and shall comply with the requirements for a smoke door assembly in accordance with Section 716.5.3. The door shall be installed in accordance with NFPA 105.*

909.20.2.3 Standpipes. *Where access to the stairway is by way of a vestibule, Fire department standpipe connections and valves serving the floor shall be within the vestibule unless otherwise approved by the fire code official. Standpipe connections in vestibules shall be located in such a manner so as not to obstruct egress where hose lines are connected and charged.*

909.20.2.4 Pressure differences. *The minimum pressure differences within the vestibule with the doors closed shall be 0.05-inch water gage (12.44 Pa) positive pressure relative to the fire floor and 0.05-inch water gage (12.44 Pa) negative pressure relative to the exit enclosure. No pressure difference is required relative to a nonfire floor.*

909.20.2.5 Relief vent. *A relief vent capable of discharging a minimum of 2,500 cubic feet per minute (1180 L/s) of air at the design pressure difference shall be located in the upper portion of such pressurized exit enclosures.*

Exception: *When approved by the enforcing agency, other engineered design methods capable of discharging a minimum of 2,500 cubic feet per minute (1180 L/s) of air at the design pressure difference shall be permitted.*

909.20.3 Natural ventilation alternative. The provisions of Sections 909.20.3.1 through 909.20.3.3 shall apply to ventilation of smokeproof enclosures by natural means.

909.20.3.1 Balcony doors. Where access to the stairway or ramp is by way of an open exterior balcony, the door assembly into the enclosure shall be a fire door assembly in accordance with Section 716.

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***909.20.3.2* Vestibule ventilation.** *Where access to the stairway is by way of a vestibule,* each vestibule shall have a minimum net area of 16 square feet (1.5 m^2) of opening in a wall facing an outer court, yard or public way that is not less than 20 feet (6096 mm) in width.

➡ **909.20.4 *Reserved.***

909.20.4.1 Pressure differences. *The pressurization system shall be designed so that the minimum pressure differences provided within the vestibule with the doors closed shall be 0.05-inch water gage (12.44 Pa) positive pressure relative to the fire floor and 0.05-inch water gage (12.44 Pa) negative pressure relative to the exit enclosure. No pressure difference is required relative to a nonfire floor.*

909.20.4.2 Relief vent. *A relief vent capable of discharging a minimum of 2,500 cubic feet per minute (1180 L/s) of air at the design pressure difference shall be located in the upper portion of such pressurized exit stairway or ramp enclosures.*

Exception: *When approved by the enforcing agency, other engineered design methods capable of discharging a minimum of 2,500 cubic feet per minute (1180 L/s) of air at the design pressure difference shall be permitted.*

909.20.5 Pressurized stair and vestibule alternative. The provisions of Sections 909.20.5.1 through 909.20.5.3 shall apply to smokeproof enclosures using a pressurized stair and pressurized entrance vestibule.

909.20.5.1 Vestibule doors. The door assembly from the building into the vestibule shall be a fire door assembly complying with Section 716.2.2.1. The door assembly from the vestibule to the stairway shall have not less than a 20-minute fire protection rating and meet the requirements for a smoke door assembly in accordance with Section 716.2.2.1. The door shall be installed in accordance with NFPA 105.

909.20.5.2 Pressure difference. The stair enclosure shall be pressurized to not less than 0.05 inch of water gage (12.44 Pa) positive pressure relative to the vestibule with all stairway doors closed under the maximum anticipated stack pressures. The vestibule, with doors closed, shall have not less than 0.05 inch of water gage (12.44 Pa) positive pressure relative to the fire floor. The pressure difference across doors shall not exceed 30 pounds (133-N) maximum force to begin opening the door.

909.20.5.3 Dampered relief opening. A controlled relief vent having the capacity to discharge not less than 2,500 cubic feet per minute (1180 L/s) of air at the design pressure difference shall be located in the upper portion of the pressurized exit enclosure.

909.20.5.4 Smoke detection. The fan system shall be equipped with a smoke detector that will automatically shut down the fan system when smoke is detected within the system.

909.20.6 *Pressurization* equipment. The activation of *pressurization* equipment required by the alternatives in Sections 909.20.4 and 909.20.5 shall be by smoke detectors installed at each floor level at an approved location at the entrance to the smokeproof enclosure *and upon activation of the automatic controls required by Section 909.12.4*. When the closing device for the stairway and ramp shaft and vestibule doors is activated by smoke detection or power failure, the mechanical equipment shall activate and operate at the required performance levels. Smoke detectors shall be installed in accordance with Section 907.3.

909.20.6.1 *Pressurization* systems. Smokeproof enclosure *pressurization* systems shall be independent of other building ventilation systems. The equipment, control wiring, power wiring and ductwork shall comply with one of the following:

1. Equipment, control wiring, power wiring and ductwork shall be located exterior to the building and directly connected to the smokeproof enclosure or connected to the smokeproof enclosure by ductwork enclosed by not less than 2-hour fire barriers constructed in accordance with Section 707 or horizontal assemblies constructed in accordance with Section 711, or both.
2. Equipment, control wiring, power wiring and ductwork shall be located within the smokeproof enclosure with intake or exhaust directly from and to the outside or through ductwork enclosed by not less than 2-hour fire barriers constructed in accordance with Section 707 or horizontal assemblies constructed in accordance with Section 711, or both.
3. Equipment, control wiring, power wiring and ductwork shall be located within the building if separated from the remainder of the building, including other mechanical equipment, by not less than 2-hour fire barriers constructed in accordance with Section 707 or horizontal assemblies constructed in accordance with Section 711, or both.

Exception:

1. Control wiring and power wiring located outside of a 2-hour fire barrier construction shall be protected using any one of the following methods:
    1.1. Cables used for survivability of required critical circuits shall be listed in accordance with UL 2196 and shall have a fire-resistance rating of not less than 2 hours.
    1.2. Where encased with not less than 2 inches (51 mm) of concrete.
    1.3. Electrical circuit protective systems shall have a fire-resistance rating of not less than 2 hours. Electrical circuit protective systems shall be installed in accordance with their listing requirements.

909.20.6.2 Standby power. *Pressurization* and stairway and ramp shaft ventilation systems and automatic fire detection systems shall be provided with standby power in accordance with Section 2702.

909.20.6.3 Acceptance and testing. Before the mechanical equipment is approved, the system shall be tested in the presence of the building official to confirm that the system is operating in compliance with these requirements.

909.21 Elevator hoistway pressurization alternative. Where elevator hoistway pressurization is provided in lieu of required enclosed elevator lobbies, the pressurization system shall comply with Sections 909.21.1 through 909.21.11. The design shall consider the interaction effects of the operation of multiple smoke control systems for all design scenarios in accordance with Section 909.4.7. All components or systems associated with the means of mitigating adverse interaction shall comply with the applicable subsections of Section 909.

909.21.1 Pressurization requirements. Elevator hoistways shall be pressurized to maintain a minimum positive pressure of 0.10 inch of water (25 Pa) and a maximum positive pressure of 0.25 inch of water (67 Pa) with respect to adjacent occupied space on all floors. This pressure shall be measured at the midpoint of each hoistway door, with all elevator cars at the floor of recall and all hoistway doors on the floor of recall open and all other hoistway doors closed. The pressure differentials shall be measured between the hoistway and the adjacent elevator landing. The opening and closing of hoistway doors at each level must be demonstrated during this test. The supply air intake shall be from an outside, uncontaminated source located a minimum distance of 20 feet (6096 mm) from any air exhaust system or outlet.

Exceptions:

1. On floors containing only Group R occupancies, the pressure differential is permitted to be measured between the hoistway and a dwelling unit or sleeping unit.
2. Where an elevator opens into a lobby enclosed in accordance with Section 3007.6 or 3008.6, the pressure differential is permitted to be measured between the hoistway and the space immediately outside the door(s) from the floor to the enclosed lobby.
3. The pressure differential is permitted to be measured relative to the outdoor atmosphere on floors other than the following:
   3.1. The fire floor.
   3.2. The two floors immediately below the fire floor.
   3.3. The floor immediately above the fire floor.
4. The minimum positive pressure of 0.10 inch of water (25 Pa) and a maximum positive pressure of 0.25 inch of water (67 Pa) with respect to occupied floors are not required at the floor of recall with the doors open.

909.21.1.1 Use of ventilation systems. Ventilation systems, other than hoistway supply air systems, are permitted to be used to exhaust air from adjacent spaces on the fire floor, two floors immediately below and one floor immediately above the fire floor to the building's exterior where necessary to maintain positive pressure relationships as required in Section 909.21.1 during operation of the elevator shaft pressurization system.

909.21.2 Rational analysis. A rational analysis complying with Section 909.4 shall be submitted with the construction documents.

909.21.3 Ducts for system. Any duct system that is part of the pressurization system shall be protected with the same fire-resistance rating as required for the elevator shaft enclosure.

909.21.4 Fan system. The fan system provided for the pressurization system shall be as required by Sections 909.21.4.1 through 909.21.4.4.

909.21.4.1 Fire resistance. Where located within the building, the fan system that provides the pressurization shall be protected with the same fire-resistance rating required for the elevator shaft enclosure.

909.21.4.2 Smoke detection. The fan system shall be equipped with a smoke detector that will automatically shut down the fan system when smoke is detected within the system.

909.21.4.3 Separate systems. A separate fan system shall be used for each elevator hoistway.

909.21.4.4 Fan capacity. The supply fan shall be either adjustable with a capacity of not less than 1,000 cubic feet per minute (0.4719 m^3/s) per door, or that specified by a registered design professional to meet the requirements of a designed pressurization system.

909.21.5 Standby power. The pressurization system shall be provided with standby power in accordance with Section 2702.

909.21.6 Activation of pressurization system. The elevator pressurization system shall be activated upon activation of the elevator lobby smoke detectors.

909.21.7 Testing. Testing for performance shall be required in accordance with Section 909.18.8. System acceptance shall be in accordance with Section 909.19.

909.21.8 Marking and identification. Detection and control systems shall be marked in accordance with Section 909.14.

909.21.9 Control diagrams. Control diagrams shall be provided in accordance with Section 909.15.

909.21.10 Control panel. A control panel complying with Section 909.16 shall be provided.

909.21.11 System response time. Hoistway pressurization systems shall comply with the requirements for smoke control system response time in Section 909.17.

SECTION 910—SMOKE AND HEAT REMOVAL

[F] 910.1 General. Where required by this code, smoke and heat vents or mechanical smoke removal systems shall conform to the requirements of this section.

[F] 910.2 Where required. Smoke and heat vents or a mechanical smoke removal system shall be installed as required by Sections 910.2.1 and 910.2.2.

Exceptions:

1. Frozen food warehouses used solely for storage of Class I and II commodities where protected by an approved automatic sprinkler system.
2. Smoke and heat removal shall not be required in areas of buildings equipped with early suppression fast-response (ESFR) sprinklers.
3. Smoke and heat removal shall not be required in areas of buildings equipped with control mode special application sprinklers with a response time index of 50 $(m \times s)^{1/2}$ or less that are listed to control a fire in stored commodities with 12 or fewer sprinklers.

[F] 910.2.1 Group F-1 or S-1. Smoke and heat vents installed in accordance with Section 910.3 or a mechanical smoke removal system installed in accordance with Section 910.4 shall be installed in buildings and portions thereof used as a Group F-1 or S-1 occupancy having more than 50,000 square feet (4645 m^2) of undivided area. In occupied portions of a building equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 where the upper surface of the story is not a roof assembly, a mechanical smoke removal system in accordance with Section 910.4 shall be installed.

Exception: *Group F-1 aircraft manufacturing buildings and* Group S-1 aircraft repair hangars.

[F] 910.2.2 High-piled combustible storage. Smoke and heat removal required by Table 3206.2 of the *California Fire Code* for buildings and portions thereof containing high-piled combustible storage shall be installed in accordance with Section 910.3 in unsprinklered buildings. In buildings and portions thereof containing high-piled combustible storage equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1, a smoke and heat removal system shall be installed in accordance with Section 910.3 or 910.4. In occupied portions of a building equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1, where the upper surface of the story is not a roof assembly, a mechanical smoke removal system in accordance with Section 910.4 shall be installed.

[F] 910.3 Smoke and heat vents. The design and installation of smoke and heat vents shall be in accordance with Sections 910.3.1 through 910.3.3.

[F] 910.3.1 Listing and labeling. Smoke and heat vents shall be listed and labeled to indicate compliance with UL 793 or FM 4430 *or ICC-ES AC 331.*

[F] 910.3.2 Smoke and heat vent locations. Smoke and heat vents shall be located 20 feet (6096 mm) or more from adjacent lot lines and fire walls and 10 feet (3048 mm) or more from fire barriers. Vents shall be uniformly located within the roof in the areas of the building where the vents are required to be installed by Section 910.2 with consideration given to roof pitch, sprinkler location and structural members.

[F] 910.3.3 Smoke and heat vents area. The required aggregate area of smoke and heat vents shall be calculated as follows:

For buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1:

Equation 9-3 $A_{VR} = V/9000$

where:

A_{VR} = The required aggregate vent area (ft^2).

V = Volume (ft^3) of the area that requires smoke removal.

For unsprinklered buildings:

Equation 9-4 $A_{VR} = A_{FA}/50$

where:

A_{VR} = The required aggregate vent area (ft^2).

A_{FA} = The area of the floor in the area that requires smoke removal.

[F] 910.3.4 Vent operation. Smoke and heat vents shall be capable of being operated by approved automatic and manual means.

[F] 910.3.5 Fusible link temperature rating. Where vents are installed in areas provided with automatic fire sprinklers and the vents operate by fusible link, the fusible link shall have a temperature rating of 360°F (182°C).

[F] 910.4 Mechanical smoke removal systems. Mechanical smoke removal systems shall be designed and installed in accordance with Sections 910.4.1 through 910.4.7.

[F] 910.4.1 Automatic sprinklers required. The building shall be equipped throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.1.

[F] 910.4.2 Exhaust fan construction. Exhaust fans that are part of a mechanical smoke removal system shall be rated for operation at 221°F (105°C). Exhaust fan motors shall be located outside of the exhaust fan air stream.

[F] 910.4.3 System design criteria. The mechanical smoke removal system shall be sized to exhaust the building at a minimum rate of two air changes per hour based on the volume of the building or portion thereof without contents. The capacity of each exhaust fan shall not exceed 30,000 cubic feet per minute (14.2 m^3/s).

[F] 910.4.3.1 Makeup air. Makeup air openings shall be provided within 6 feet (1829 mm) of the floor level. Operation of makeup air openings shall be manual or automatic. The minimum gross area of makeup air inlets shall be 8 square feet per 1,000 cubic feet per minute (0.74 m^2 per 0.4719 m^3/s) of smoke exhaust.

[F] 910.4.4 Activation. The mechanical smoke removal system shall be activated by manual controls only.

[F] 910.4.5 Manual control location. Manual controls shall be located where they are able to be accessed by the fire service from an exterior door of the building and separated from the remainder of the building by not less than 1-hour fire barriers constructed in accordance with Section 707 or horizontal assemblies constructed in accordance with Section 711, or both.

[F] 910.4.6 Control wiring. Wiring for operation and control of mechanical smoke removal systems shall be connected ahead of the main disconnect in accordance with Section 701.12E of *the California Electrical Code* and be protected against interior fire exposure to temperatures in excess of 1,000°F (538°C) for a period of not less than 15 minutes.

[F] 910.4.7 Controls. Where building air-handling and mechanical smoke removal systems are combined or where independent building air-handling systems are provided, fans shall automatically shut down in accordance with the *California Mechanical Code*. The manual controls provided for the smoke removal system shall have the capability to override the automatic shutdown of fans that are part of the smoke removal system.

[F] 910.5 Maintenance. Smoke and heat vents and mechanical smoke removal systems shall be maintained in accordance with the *California Fire Code*.

SECTION 911—FIRE COMMAND CENTER

[F] 911.1 General. Where required by other sections of this code, in buildings classified as high-rise buildings by this code and in all F-1 and S-1 occupancies with a building footprint of over 500,000 square feet (46 452 m^2) *and Group I-2 occupancies having occupied floors located more than 75 feet above the lowest level of fire department vehicle access*, a fire command center for fire department operations shall be provided and shall comply with Sections 911.1.1 through 911.1.7.

[F] 911.1.1 Location and access. The location and access to the fire command center shall be approved by the fire code official.

[F] 911.1.2 Separation. The fire command center shall be separated from the remainder of the building by not less than a 1-hour fire barrier constructed in accordance with Section 707 or horizontal assembly constructed in accordance with Section 711, or both.

[F] 911.1.3 Size. The fire command center shall be not less than 0.015 percent of the total building area of the facility served or 200 square feet (19 m^2) in area, whichever is greater, with a minimum dimension of 0.7 times the square root of the room area or 10 feet (3048 mm), whichever is greater. Where a fire command is required for Group F-1 and S-1 occupancies with a building footprint greater than 500,000 square feet (46 452 m^2) in area, the fire command center shall have a minimum size of 96 square feet (9 m^2) with a minimum dimension of 8 feet (2348 mm) where approved by the fire code official.

[F] 911.1.4 Layout approval. A layout of the fire command center and all features required by this section to be contained therein shall be submitted for approval prior to installation.

[F] 911.1.5 Storage. Storage unrelated to operation of the fire command center shall be prohibited.

[F] 911.1.6 Required features. The fire command center shall comply with NFPA 72 and shall contain all of the following features:

1. The emergency voice/alarm communication system control unit.
2. The fire department communications system.
3. *Fire alarm system zoning annunciator panel required by Section 907.6.4.3.*
4. Annunciator unit visually indicating the location of the elevators and whether they are operational.
5. Status indicators and controls for air distribution systems.
6. The firefighter's control panel required by Section 909.16 for smoke control systems installed in the building.
7. Controls for unlocking interior exit stairway doors simultaneously.
8. Sprinkler valve and waterflow detector display panels.
9. Emergency and standby power status indicators.
10. A telephone for fire department use with controlled access to the public telephone system.
11. Fire pump status indicators.
12. Schematic building plans indicating the typical floor plan and detailing the building core, means of egress, fire protection systems, firefighter air replenishment system, firefighting equipment and fire department access and the location of fire walls, fire barriers, fire partitions, smoke barriers and smoke partitions.
13. An approved Building Information Card that contains, but is not limited to, the following information:
    - 13.1. General building information that includes: property name, address, the number of floors in the building above and below grade, use and occupancy classification (for mixed uses, identify the different types of occupancies on each floor), and the estimated building population during the day, night and weekend.
    - 13.2. Building emergency contact information that includes: a list of the building's emergency contacts including but not limited to building manager and building engineer and their respective work phone number, cell phone number, e-mail address.
    - 13.3. Building construction information that includes: the type of building construction including but not limited to floors, walls, columns, and roof assembly.

13.4. Exit access and exit stairway information that includes: number of exit access and exit stairways in the building, each exit access and exit stairway designation and floors served, location where each exit access and exit stairway discharges, interior exit stairways that are pressurized, exit stairways provided with emergency lighting, each exit stairway that allows reentry, exit stairways providing roof access; elevator information that includes: number of elevator banks, elevator bank designation, elevator car numbers and respective floors that they serve; location of elevator machine rooms, control rooms and control spaces; location of sky lobby, location of freight elevator banks.

13.5. Building services and system information that includes: location of mechanical rooms, location of building management system, location and capacity of all fuel oil tanks, location of emergency generator, location of natural gas service.

13.6. Fire protection system information that includes: location of standpipes, location of fire pump room, location of fire department connections, floors protected by automatic sprinklers, location of different types of automatic sprinkler systems installed including, but not limited to, dry, wet and pre-action.

13.7. Hazardous material information that includes: location of hazardous material, quantity of hazardous material.

14. Work table.

15. Generator supervision devices, manual start and transfer features.

16. Public address system, where specifically required by other sections of this code.

17. Elevator fire recall switch in accordance with *California Code of Regulations, Title 8, Division 1, Chapter 4, Subchapter 6, Elevator Safety Orders.*

18. Elevator emergency or standby power selector switch(es), where emergency or standby power is provided.

19. A master switch for unlocking elevator lobby doors permitted by Section 1010.2.12.1.

[SFM] *Fire command centers shall not be used for the housing of any boiler, heating unit, generator, combustible storage or similar hazardous equipment or storage.*

[F] 911.1.7 Fire command center identification. The fire command center shall be identified by a permanent easily visible sign reading "FIRE COMMAND CENTER" located on the door to the fire command center.

911.1.8 Ventilation. *The fire command center shall be provided with an independent ventilation or air-conditioning system.*

SECTION 912—FIRE DEPARTMENT CONNECTIONS

[F] 912.1 Installation. Fire department connections shall be installed in accordance with the NFPA standard applicable to the system design and shall comply with Sections 912.2 through 912.6.

[F] 912.2 Location. With respect to hydrants, driveways, buildings and landscaping, fire department connections shall be so located that fire apparatus and hose connected to supply the system will not obstruct access to the buildings for other fire apparatus. The location of fire department connections shall be approved by the fire code official.

[F] 912.2.1 Visible location. Fire department connections shall be located on the street side of buildings or facing approved fire apparatus access roads, fully visible and recognizable from the street, fire apparatus access road or nearest point of fire department vehicle access or as otherwise approved by the fire code official.

[F] 912.2.2 Existing buildings. On existing buildings, wherever the fire department connection is not visible to approaching fire apparatus, the fire department connection shall be indicated by an approved sign mounted on the street front or on the side of the building. Such sign shall have the letters "FDC" not less than 6 inches (152 mm) high and words in letters not less than 2 inches (51 mm) high or an arrow to indicate the location. Such signs shall be subject to the approval of the fire code official.

[F] 912.3 Fire hose threads. Fire hose threads used in connection with standpipe systems shall be approved and shall be compatible with fire department hose threads.

[F] 912.4 Access. Immediate access to fire department connections shall be maintained at all times and without obstruction by fences, bushes, trees, walls or any other fixed or moveable object. Access to fire department connections shall be approved by the fire code official.

Exceptions*:*

1. Fences, where provided with an access gate equipped with a sign complying with the legend requirements of *Section 912.5* and a means of emergency operation. The gate and the means of emergency operation shall be approved by the fire code official and maintained operational at all times.

2. When acceptable to the fire authority having jurisdiction, fire department connections for Group I-3 detention facilities may be located inside all security walls or fences on the property.

[F] 912.4.1 Locking fire department connection caps. The fire code official is authorized to require locking caps on fire department connections for water-based fire protection systems where the responding fire department carries appropriate key wrenches for removal.

[F] 912.4.2 Clear space around connections. A working space of not less than 36 inches (914 mm) in width, 36 inches (914 mm) in depth and 78 inches (1981 mm) in height shall be provided and maintained in front of and to the sides of wall-mounted fire

department connections and around the circumference of free-standing fire department connections, except as otherwise required or approved by the fire code official.

[F] 912.4.3 Physical protection. Where fire department connections are subject to impact by a motor vehicle, vehicle impact protection shall be provided in accordance with Section 312 of the *California Fire Code*.

[F] 912.5 Signs. A metal sign with raised letters not less than 1 inch (25 mm) in size shall be mounted on all fire department connections serving automatic sprinklers, standpipes or fire pump connections. Such signs shall read: "AUTOMATIC SPRINKLERS," "STANDPIPES," "TEST CONNECTION," "STANDPIPE AND AUTOSPKR" or "AUTOSPKR AND STANDPIPE," or a combination thereof as applicable.

[F] 912.5.1 Lettering. Each fire department connection (FDC) shall be designated by a sign with raised letters not less than 1 inch (25.4 mm) in height. For manual standpipe systems, the sign shall also indicate that the system is manual and that it is either wet or dry.

[F] 912.5.2 Serving multiple buildings. Where a fire department connection (FDC) services multiple buildings, structures or locations, a sign shall be provided indicating the building, structures or locations served. Where the FDC does not serve the entire building, a sign shall be provided indicating the portions of the building served.

[F] 912.5.3 Multiple or combined systems. Where combination or multiple system types are supplied by the fire department connection, the sign or combination of signs shall indicate both designated services.

[F] 912.5.4 Indication of pressure. The sign also shall indicate the pressure required at the outlets to deliver the standpipe system demand.

Exception: Where the pressure required is 150 pounds per square inch (1034 kPa) or less.

[P] 912.6 Backflow protection. The potable water supply to automatic sprinkler and standpipe systems shall be protected against backflow as required by the *Health and Safety Code Section 13114.7.*

SECTION 913—FIRE PUMPS

[F] 913.1 General. Where provided, fire pumps for fire protection systems shall be installed in accordance with this section and NFPA 20.

Exception: Pumps for automatic sprinkler systems installed in accordance with Section 903.3.1.3, or Section *R313* of the *California Residential Code*.

[F] 913.2 Protection against interruption of service. The fire pump, driver and controller shall be protected in accordance with NFPA 20 against possible interruption of service through damage caused by explosion, fire, flood, earthquake, rodents, insects, windstorm, freezing, vandalism and other adverse conditions.

913.2.1 Protection of fire pump rooms. Fire pumps shall be located in rooms that are separated from all other areas of the building by 2-hour fire barriers constructed in accordance with Section 707 or 2-hour horizontal assemblies constructed in accordance with Section 711, or both.

Exceptions:

1. In other than high-rise buildings, separation by 1-hour fire barriers constructed in accordance with Section 707 or 1-hour horizontal assemblies constructed in accordance with Section 711, or both, shall be permitted in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2.
2. Separation is not required for fire pumps physically separated in accordance with NFPA 20.

[F] 913.2.2 Circuits supplying fire pumps. Cables used for survivability of circuits supplying fire pumps shall be protected using one of the following methods:

1. Cables used for survivability of required critical circuits shall be listed in accordance with UL 2196 and shall have a fire-resistance rating of not less than 1 hour.
2. Electrical circuit protective systems shall have a fire-resistance rating of not less than 1 hour. Electrical circuit protective systems shall be installed in accordance with their listing requirements.
3. Construction having a fire-resistance rating of not less than 1 hour.
4. The cable or raceway is encased in a minimum of 2 inches (51 mm) of concrete.

Exception: This section shall not apply to cables, or portions of cables, located within a fire pump room or generator room which is separated from the remainder of the occupancy with fire-resistance-rated construction.

[F] 913.3 Temperature of pump room. Suitable means shall be provided for maintaining the temperature of a pump room or pump house, where required, above 40°F (5°C).

[F] 913.3.1 Engine manufacturer's recommendation. Temperature of the pump room, pump house or area where engines are installed shall never be less than the minimum recommended by the engine manufacturer. The engine manufacturer's recommendations for oil heaters shall be followed.

[F] 913.4 Valve supervision. Where provided, the fire pump suction, discharge and bypass valves, and isolation valves on the backflow prevention device or assembly shall be supervised open by one of the following methods:

1. Central-station, proprietary or remote-station signaling service.
2. Local signaling service that will cause the sounding of an audible signal at a constantly attended location.

3. Locking valves open.
4. Sealing of valves and approved weekly recorded inspection where valves are located within fenced enclosures under the control of the owner.

[F] 913.4.1 Test outlet valve supervision. Fire pump test outlet valves shall be supervised in the closed position.

[F] 913.5 Acceptance test. Acceptance testing shall be done in accordance with the requirements of NFPA 20.

913.6 Fire pumps in high-rise buildings. *Engine-driven fire pumps and electric drive fire pumps supplied by generators shall both be provided with an on-premises fuel supply, sufficient for not less than 8-hour full-demand operation at 100 percent of the rated pump capacity in addition to all other required supply demands in accordance with NFPA 20 and this section.*

SECTION 914—EMERGENCY RESPONDER SAFETY FEATURES

[F] 914.1 Shaftway markings. Vertical shafts shall be identified as required by Sections 914.1.1 and 914.1.2.

[F] 914.1.1 Exterior access to shaftways. Outside openings with access to the fire department and that open directly on a hoistway or shaftway communicating between two or more floors in a building shall be plainly marked with the word "SHAFTWAY" in red letters not less than 6 inches (152 mm) high on a white background. Such warning signs shall be placed so as to be readily discernible from the outside of the building.

[F] 914.1.2 Interior access to shaftways. Door or window openings to a hoistway or shaftway from the interior of the building shall be plainly marked with the word "SHAFTWAY" in red letters not less than 6 inches (152 mm) high on a white background. Such warning signs shall be placed so as to be readily discernible.

Exception: Markings shall not be required on shaftway openings that are readily discernible as openings onto a shaftway by the construction or arrangement.

[F] 914.2 Equipment room identification. Fire protection equipment shall be identified in an approved manner. Rooms containing controls for air-conditioning systems, sprinkler risers and valves or other fire detection, suppression or control elements shall be identified for the use of the fire department. Approved signs required to identify fire protection equipment and equipment location shall be constructed of durable materials, permanently installed and readily visible.

SECTION 915—CARBON MONOXIDE (CO) DETECTION

[F] 915.1 General. Carbon monoxide (CO) detection shall be installed in new buildings in accordance with Sections 915.1.1 *through 915.7.* ***[Not adopted by HCD]*** Carbon monoxide detection shall be installed in existing buildings in accordance with Chapter 11 of the *California Fire Code*.

Pursuant to Health and Safety Code Section 17926, carbon monoxide detection shall be installed in all existing Group R buildings as required in Section 915.

Exception: Carbon monoxide detection is not required in Group S, Group F and Group U occupancies that are not normally occupied.

[F] 915.1.1 Where required. Carbon monoxide detection shall be installed in the locations specified in Section 915.2 where any of the following conditions exist.

1. In buildings that contain a CO source.
2. In buildings that contain or are supplied by a CO-producing forced-air furnace.
3. In buildings with attached private garages.
4. In buildings that have a CO-producing vehicle that is used within the building.

[F] 915.2 Locations. Carbon monoxide detection shall be installed *in accordance with the manufacturer's published instructions* in the locations specified in Sections 915.2.1 through 915.2.3.

[F] 915.2.1 Dwelling units. Carbon monoxide detection shall be installed in dwelling units *in the following locations:*

1. Outside of each separate sleeping area in the immediate vicinity of the bedrooms.
2. *On every occupiable level of a dwelling unit, including basements.*
3. Where a CO source is located within a bedroom or its attached bathroom, carbon monoxide detection shall be installed within the bedroom.

[F] 915.2.2 Sleeping units. Carbon monoxide detection shall be installed in sleeping units.

Exception: Carbon monoxide detection shall be allowed to be installed outside of each separate sleeping area in the immediate vicinity of the sleeping unit where the sleeping unit or its attached bathroom does not contain a CO source and is not served by a CO-producing forced-air furnace.

[F] 915.2.3 Group E occupancies. A carbon monoxide system that uses carbon monoxide detectors shall be installed in Group E occupancies *where classrooms include any of the conditions identified in Sections 915.1.2 through 915.1.6*. Alarm signals from carbon monoxide detectors shall be automatically transmitted to an on-site location *as approved by the authority having jurisdiction.*

Exception: Carbon monoxide alarm signals shall not be required to be automatically transmitted to an on-site location that is staffed by school personnel in Group E occupancies with an occupant load of 30 or less.

[F] 915.2.4 CO-producing forced-air furnace. Carbon monoxide detection complying with Item 2 of Section 915.1.1 shall be installed in all enclosed rooms and spaces served by a fuel-burning, forced-air furnace.

Exceptions:

1. Where a carbon monoxide detector is provided in the first room or space served by each main duct leaving the furnace, and the carbon monoxide alarm signals are automatically transmitted to an approved location.
2. Dwelling units that comply with Section 915.2.1.

[F] 915.2.5 Private garages. Carbon monoxide detection complying with Item 3 of Section 915.1.1 shall be installed within enclosed occupiable rooms or spaces that are contiguous to the attached private garage.

Exceptions:

1. In buildings without communicating openings between the private garage and the building.
2. In rooms or spaces located more than one story above or below a private garage.
3. Where the private garage connects to the building through an open-ended corridor.
4. An open parking garage complying with Section 406.5 or an enclosed parking garage complying with Section 406.6 shall not be considered a private garage.
5. Dwelling units that comply with Section 915.2.1.

[F] 915.2.6 All other occupancies. For locations other than those specified in Section 915.2.1 through 915.2.5, carbon monoxide detectors shall be installed on the ceiling of enclosed rooms or spaces containing CO producing devices or served by a CO source forced-air furnace.

Exception: Where environmental conditions prohibit the installation of carbon monoxide detector in an enclosed room or space, carbon monoxide detectors shall be installed in an approved enclosed location contiguous with the room or space that contains a CO source.

[F] 915.3 Carbon monoxide detection. Carbon monoxide detection required by Sections 915.1 through 915.2.3 shall be provided by carbon monoxide alarms complying with Section 915.4 or carbon monoxide detection systems complying with Section 915.5.

[F] 915.3.1 Alarm limitations. Carbon monoxide alarms shall only be installed in dwelling units and in sleeping units. They shall not be installed in locations where the code requires carbon monoxide detectors to be used.

[F] 915.3.2 Fire alarm system required. New buildings that are required by Section 907.2 to have a fire alarm system and by Section 915.2 to have carbon monoxide detectors shall be connected to the fire alarm system in accordance with NFPA 72.

[F] 915.3.3 Fire alarm systems not required. In new buildings that are not required by Section 907.2 to have a fire alarm system, carbon monoxide detection shall be provided by one of the following:

1. Carbon monoxide detectors connected to an approved carbon monoxide detection system in accordance with NFPA 72.
2. Carbon monoxide detectors connected to an approved combination system in accordance with NFPA 72.
3. Carbon monoxide detectors connected to an approved fire alarm system in accordance with NFPA 72.
4. Where approved by the fire code official, carbon monoxide alarms maintained in accordance with the manufacturer's instructions.

[F] 915.3.4 Installation. Carbon monoxide detection shall be installed in accordance with NFPA 72 and the manufacturer's instructions.

[F] 915.4 Carbon monoxide alarms. Carbon monoxide alarms shall comply with Sections 915.4.1 through *915.4.5*.

[F] 915.4.1 Power source. Carbon monoxide alarms shall receive their primary power from the building wiring where such wiring is served from a commercial source, and when primary power is interrupted, shall receive power from a battery. Wiring shall be permanent and without a disconnecting switch other than that required for overcurrent protection.

Exceptions:

1. Where installed in buildings without commercial power, battery-powered carbon monoxide alarms shall be an acceptable alternative.
2. *Carbon monoxide alarms in Group R occupancies shall be permitted to receive their primary power from other power sources recognized for use by NFPA 72.*
3. *Carbon monoxide alarms in Group R occupancies shall be permitted to be battery-powered or plug-in with a battery backup in existing buildings built prior to January 1, 2011, under any of the following conditions:*
    - 3.1. *No construction is taking place.*
    - 3.2. *Repairs or alterations do not result in the removal of interior wall and ceiling finishes exposing the structure in areas/spaces where carbon monoxide alarms are required.*
    - 3.3. *Repairs or alterations are limited to the exterior surfaces of dwellings, such as the replacement of roofing or siding, or the addition or replacement of windows or doors, or the addition of a porch or deck.*
    - 3.4. *Work is limited to the installation, alteration or repair of plumbing, mechanical or electrical systems, which do not result in the removal of interior wall or ceiling finishes exposing the structure in areas/spaces where carbon monoxide alarms are required.*

[F] 915.4.2 Listings. *Residential* Carbon monoxide alarms shall be listed in accordance with UL 2034.

No person shall install, market, distribute, offer for sale, or sell any carbon monoxide device in the State of California unless the device and instructions have been approved and listed by the Office of the State Fire Marshal.

➡ **[F] 915.4.3 Combination alarms.** Combination carbon monoxide/smoke alarms shall be an acceptable alternative to carbon monoxide alarms. Combination carbon monoxide/smoke alarms shall be listed in accordance with UL 217 and UL 2034.

Combination carbon monoxide/smoke alarms shall comply with Section 915, and all requirements for listing and approval by the Office of the State Fire Marshal for smoke alarms.

[F] 915.4.4 Interconnection. *Where more than one carbon monoxide alarm is required to be installed within a dwelling unit or within a sleeping unit in Group R occupancies, the alarms shall be interconnected in a manner that activation of one alarm shall activate all of the alarms in the individual unit.*

Exception: *Interconnection is not required in existing buildings, built prior to January 1, 2011, under any of the following conditions:*

1. *Physical interconnection is not required where listed wireless alarms are installed and all alarms sound upon activation of one alarm.*
2. *No construction is taking place.*
3. *Repairs or alterations do not result in the removal of interior wall and ceiling finishes exposing the structure in areas/spaces where carbon monoxide alarms are required.*
4. *Repairs or alterations are limited to the exterior surfaces of dwellings, such as the replacement of roofing or siding, or the addition or replacement of windows or doors, or the addition of a porch or deck.*
5. *Work is limited to the installation, alteration or repair of plumbing, mechanical or electrical systems, which do not result in the removal of interior wall or ceiling finishes exposing the structure in areas/spaces where carbon monoxide alarms are required.*

[F] 915.5 Carbon monoxide detection systems. Carbon monoxide detection systems shall be an acceptable alternative to carbon monoxide alarms and shall comply with Sections 915.5.1 through 915.5.3.

[F] 915.5.1 General. Carbon monoxide detectors shall be listed in accordance with UL 2075.

➡ **[F] 915.5.2 Locations.** Carbon monoxide detectors shall be installed in the locations specified in Section 915.2 *or* NFPA 72.

[F] 915.5.3 Combination detectors. Combination carbon monoxide/smoke detectors shall be an acceptable alternative to carbon monoxide detectors, provided that they are listed in accordance with UL 268 and UL 2075.

Combination carbon monoxide/smoke detectors shall comply with all requirements for listing and approval by the Office of the State Fire Marshal for smoke alarms.

[F] 915.5.4 Occupant notification. Activation of a carbon monoxide detector shall annunciate at the control unit and shall initiate audible and visible alarm notification throughout the building.

Exception: Occupant notification is permitted to be limited to the area where the carbon monoxide alarm signal originated and other signaling zones in accordance with the fire safety plan, provided that the alarm signal from an activated carbon monoxide detector is automatically transmitted to an approved on-site location or off-premises location.

[F] 915.5.5 Duct detection. Carbon monoxide detectors placed in environmental air ducts or plenums shall not be used as a substitute for the required protection in Section 915.

[F] 915.6 Maintenance. Carbon monoxide alarms and carbon monoxide detection systems shall be maintained in accordance with *NFPA 72. Carbon monoxide alarms and carbon monoxide detectors that become inoperable or begin producing end-of-life signals shall be replaced.*

915.6.1 Enclosed parking garages. *Carbon monoxide and nitrogen dioxide detectors installed in enclosed parking garages in accordance with Section 403.7.2 of the California Mechanical Code shall be maintained in accordance with the manufacturer's instructions and their listing. Detectors that become inoperable or begin producing end-of-life signals shall be replaced.*

915.7 Visible alarms. *In buildings containing covered multifamily dwellings as defined in Chapter 2, all required carbon monoxide alarms shall be equipped with the capability to support visible alarm notification in accordance with NFPA 72.*

SECTION 916—GAS DETECTION SYSTEMS

[F] 916.1 Gas detection systems. Gas detection systems required by this code shall comply with Sections 916.2 through 916.11.

[F] 916.2 Permits. Permits shall be required as set forth in Section 105.6.10 of the *California Fire Code*.

[F] 916.2.1 Construction documents. Documentation of the gas detection system design and equipment to be used that demonstrates compliance with the requirements of this code and the *California Fire Code* shall be provided with the application for permit.

[F] 916.3 Equipment. Gas detection system equipment shall be designed for use with the gases being detected and shall be installed in accordance with manufacturer's instructions.

[F] 916.4 Power connections. Gas detection systems shall be permanently connected to the building electrical power supply or shall be permitted to be cord connected to an unswitched receptacle using an approved restraining means that secures the plug to the receptacle.

[F] 916.5 Emergency and standby power. Standby or emergency power shall be provided or the gas detection system shall initiate a trouble signal at an approved location if the power supply is interrupted.

[F] 916.6 Sensor locations. Sensors shall be installed in approved locations where leaking gases are expected to accumulate.

[F] 916.7 Gas sampling. Gas sampling shall be performed continuously. Sample analysis shall be processed immediately after sampling, except as follows:

1. For HPM gases, sample analysis shall be performed at intervals not exceeding 30 minutes.
2. For toxic gases that are not HPM, sample analysis shall be performed at intervals not exceeding 5 minutes in accordance with Section 6004.2.2.7 of the *California Fire Code*.
3. Where a less frequent or delayed sampling interval is approved.

[F] 916.8 System activation. A gas detection alarm shall be initiated where any sensor detects a concentration of gas exceeding the following thresholds:

1. For flammable gases, a gas concentration exceeding 25 percent of the lower flammability limit (LFL).
2. For nonflammable gases, a gas concentration exceeding one-half of the IDLH, unless a different threshold is specified by the section of this code requiring a gas detection system.

Upon activation of a gas detection alarm, alarm signals or other required responses shall be as specified by the section of this code requiring a gas detection system. Audible and visible alarm signals associated with a gas detection alarm shall be distinct from fire alarm and carbon monoxide alarm signals.

[F] 916.9 Signage. Signs shall be provided adjacent to gas detection system alarm signaling devices that advise occupants of the nature of the signals and actions to take in response to the signal.

[F] 916.10 Fire alarm system connections. Gas sensors and gas detection systems shall not be connected to fire alarm systems unless approved and connected in accordance with the fire alarm equipment manufacturer's instructions.

[F] 916.11 Inspection, testing and sensor calibration. Gas detection systems and sensors shall be inspected, tested and calibrated in accordance with the *California Fire Code*.

SECTION 917—MASS NOTIFICATION SYSTEMS

[F] 917.1 College and university campuses. Prior to construction of a new building requiring a fire alarm system on a multiple-building college or university campus having a cumulative building occupant load of 1,000 or more, a mass notification risk analysis shall be conducted in accordance with NFPA 72. Where the risk analysis determines a need for mass notification, an approved mass notification system shall be provided in accordance with the findings of the risk analysis.

[F] 917.2 Group E occupancies. Prior to construction of a new building containing a Group E occupancy requiring a fire alarm system and having an occupant load of 500 or more, a mass notification risk analysis shall be conducted in accordance with NFPA 72. Where the risk analysis determines a need for mass notification, an approved mass notification system shall be provided in accordance with the findings of the risk analysis.

SECTION 918—EMERGENCY RESPONDER COMMUNICATION COVERAGE

[F] 918.1 General. In-building two-way emergency responder communication coverage shall be provided in all new buildings in accordance with Section 510 of the *California Fire Code*.

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CALIFORNIA BUILDING CODE – MATRIX ADOPTION TABLE
CHAPTER 10 – MEANS OF EGRESS

(Matrix Adoption Tables are nonregulatory, intended only as an aid to the code user.
See Chapter 1 for state agency authority and building applications.)

Adopting agency	BSC	BSC-CG	SFM	HCD			DSA			OSHPD							BSCC	DPH	AGR	DWR	CEC	CA	SL	SLC
				1	2	1/AC	AC	SS	SS/CC	1	1R	2	3	4	5	6								
Adopt entire chapter	X							X	X				X			X								
Adopt entire chapter as amended (amended sections listed below)			X	X	X	X				X	X	X		X	X									
Adopt only those sections that are listed below							X																	
Chapter / Section																								
1003.1			X			X	X																	
1003.1.1										X														
1003.1.2											X	X			X									
1003.2			X																					
1003.3, Exception			X																					
1003.3.1			X																					
1003.3.3.1			X																					
1003.3.4				X	X	X																		
1003.5				X	X	X																		
Table 1004.5			X																					
1004.9			X																					
1005.3.1			X																					
1005.3.2			X																					
1005.7.1			X																					
1005.7.2			X																					
1006.2.1			X																					
Table 1006.2.1			X																					
1006.2.2			X																					
1006.2.2.3			X																					
1006.2.2.4			X																					
1006.2.2.7			X																					
1006.2.2.8			X																					
Table 1006.3.4(1)			X																					
Table 1006.3.4(2)			X																					
1008.2			X																					
1008.3			X																					
1009.1			X	X	X	X	X																	
1009.2						X	X																	
1009.3						X	X																	
1009.4.1			X																					
1009.4.2							X																	
1009.5			X	X	X	X	X																	
1009.6							X																	
1009.6.3			X	X	X	X	X																	
1009.8.1.1						X	X																	
1009.8.2			X			X	X																	
1009.9						X	X																	
1009.10							X																	
1009.11						X	X																	
1009.12			X			X	X																	

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CALIFORNIA BUILDING CODE – MATRIX ADOPTION TABLE
CHAPTER 10 – MEANS OF EGRESS—continued

Adopting agency	BSC	BSC-CG	SFM	HCD			DSA			OSHPD							BSCC	DPH	AGR	DWR	CEC	CA	SL	SLC
				1	2	1/AC	AC	SS	SS/CC	1	1R	2	3	4	5	6								
Adopt entire chapter	X							X	X				X			X								
Adopt entire chapter as amended (amended sections listed below)			X	X	X	X				X	X	X		X	X									
Adopt only those sections that are listed below							X																	
Chapter / Section																								
1010 (1st paragraph below title only)							X																	
1010.1.1			X			X																		
1010.1.1.1			X																					
1010.1.2			X																					
1010.1.2.1			X																					
1010.1.4						X	X																	
1010.1.6						X	X																	
1010.1.7						X	X																	
1010.2.2			X			X	X																	
1010.2.3			X																					
1010.2.4			X																					
1010.2.7.1			X																					
1010.2.7.2			X																					
1010.2.8			X																					
1010.2.11.1			X																					
1010.2.12			X																					
1010.2.12.1			X																					
1010.2.12.1 (Item 4, 6.3 & 6.4 only)							X																	
1010.2.13			X																					
1010.2.15 *Reserved*			X																					
1010.3.1						X																		
1011 (1st paragraph below title only)							X																	
1011.2			X																					
1011.5.2			X																					
1011.5.2 [DSA-AC: exc. 4 only]							X																	
1011.6			X																					
1011.11			X																					
1011.11 (2nd paragraph only)							X																	
1011.15			X																					
1012 (1st paragraph below title only)							X																	
1012.1						X																		
1012.6.3						X																		
1012.6.4						X																		
1012.6.5						X																		
1012.10						X																		
1013.1			X																					
1013.2			X																					
1013.4			X			X	X																	
1013.6.3			X																					
1013.7			X																					

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CALIFORNIA BUILDING CODE – MATRIX ADOPTION TABLE
CHAPTER 10 – MEANS OF EGRESS—continued

Adopting agency	BSC	BSC-CG	SFM	HCD			DSA			OSHPD							BSCC	DPH	AGR	DWR	CEC	CA	SL	SLC
				1	2	1/AC	AC	SS	SS/CC	1	1R	2	3	4	5	6								
Adopt entire chapter	X							X	X				X			X								
Adopt entire chapter as amended (amended sections listed below)			X	X	X	X				X	X	X		X	X									
Adopt only those sections that are listed below							X																	
Chapter / Section																								
1013.8			X																					
1014 (1st paragraph below title only)							X																	
1014.9			X			X																		
1015.2			X				X																	
1015.3			X	X	X	X	X																	
1015.4			X																					
1015.8				X	X	X																		
1016.2			X																					
1016.2.2			X																					
Table 1017.2			X																					
1018 (1st paragraph below title only)							X																	
1018.3 Exception only							X																	
1018.5 Exception only							X																	
1019.3			X																					
1019.4			X																					
1020.2			X																					
Table 1020.2			X																					
Table 1020.3			X																					
1020.5			X							X		X		X										
1020.6			X																					
1020.7			X																					
1022.3			X																					
1023.2			X																					
1023.9			X			X																		
1023.9 (2nd paragraph only)							X																	
1023.9.1			X																					
1023.11						X																		
1024.2			X																					
1025.1			X																					
1026.4.1			X																					
1026.4.2			X																					
1026.6			X																					
1028.5			X																					
1030.1			X																					
1030.2			X																					
1030.3			X																					
1030.3.1			X																					
1030.6.3.2			X																					
1030.9.1			X																					
1031.2			X																					
1031.2.1			X																					
1031.2.2			X																					
1031.2.3			X																					

The state agency does not adopt sections identified with the following symbol: †
The Office of the State Fire Marshal's adoption of this chapter or individual sections is applicable to structures regulated by other state agencies pursuant to Section 1.11.

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CHAPTER
10
MEANS OF EGRESS

User notes:

About this chapter: Chapter 10 provides the general criteria for designing the means of egress established as the primary method for protection of people in buildings by allowing timely relocation or evacuation of building occupants. Both prescriptive and performance language is utilized in this chapter to provide for a basic approach in the determination of a safe exiting system for all occupancies. It addresses all portions of the egress system (exit access, exits and exit discharge) and includes design requirements as well as provisions regulating individual components. The requirements detail the size, arrangement, number and protection of means of egress components. Functional and operational characteristics that will permit the safe use of components without special knowledge or effort are specified.

The means of egress protection requirements work in coordination with other sections of the code, such as protection of vertical openings (see Chapter 7), interior finish (see Chapter 8), fire suppression and detection systems (see Chapter 9) and numerous others, all having an impact on life safety. Chapter 10 is subdivided into four main sections: general (Sections 1003–1015), exit access (Sections 1016–1021), exit (Sections 1022–1027) and exit discharge (Sections 1028–1029). Special allowances for the unique requirements for assembly spaces (Section 1030) and emergency escape and rescue openings (Section 1031) complete the chapter. Chapter 10 of this code is duplicated in Chapter 10 the *California Fire Code;* however, the *California Fire Code* contains one additional section on maintenance of the means of egress system in existing buildings.

SECTION 1001—ADMINISTRATION

1001.1 General. Buildings or portions thereof shall be provided with a means of egress system as required by this chapter. The provisions of this chapter shall control the design, construction and arrangement of means of egress components required to provide an approved means of egress from structures and portions thereof.

1001.2 Minimum requirements. It shall be unlawful to alter a building or structure in a manner that will reduce the number of exits or the minimum width or required capacity of the means of egress to less than required by this code.

SECTION 1002—MAINTENANCE AND PLANS

[F] 1002.1 Maintenance. Means of egress shall be maintained in accordance with the *California Fire Code*.

[F] 1002.2 Fire safety and evacuation plans. Fire safety and evacuation plans shall be provided for all occupancies and buildings where required by the *California Fire Code*. Such fire safety and evacuation plans shall comply with the applicable provisions of Sections 401.2 and 404 of the *California Fire Code*.

SECTION 1003—GENERAL MEANS OF EGRESS

1003.1 Applicability. The general requirements specified in Sections 1003 through 1015 shall apply to all three elements of the means of egress system, in addition to those specific requirements for the exit access, the exit and the exit discharge detailed elsewhere in this chapter.

[DSA-AC & HCD 1-AC] *In addition to the requirement of this chapter, means of egress, which provide access to, or egress from, buildings or facilities where accessibility is required for applications listed in Section 1.8.2.1.2 regulated by the Department of Housing and Community Development, or Section 1.9.1 regulated by the Division of the State Architect—Access Compliance, shall also comply with Chapter 11A or Chapter 11B, as applicable.*

Exception: [SFM] *Exiting requirements for Fixed Guideway Transit Systems shall be as per Section 443.*

1003.1.1 Means of egress for hospitals. [OSHPD 1] *In addition to the requirements of this chapter, means of egress for hospitals shall comply with Part 10 California Existing Building Code Section 311A.*

1003.1.2 Means of egress for hospital buildings removed from acute care service, skilled nursing facilities, intermediate care facilities and acute psychiatric hospitals. [OSHPD 1R, 2 & 5] *In addition to the requirements of this chapter, means of egress for hospital buildings removed from acute care service, skilled nursing facilities, intermediate care facilities and acute psychiatric hospitals shall comply with OSHPD amendments to Part 10 California Existing Building Code Section 311.*

1003.2 Ceiling height. The means of egress shall have a ceiling height of not less than 7 feet 6 inches (2286 mm) above the finished floor.

Exceptions:

1. Sloped ceilings in accordance with Section 1208.2.
2. Ceilings of dwelling units and sleeping units within residential occupancies in accordance with Section 1208.2.
3. Allowable projections in accordance with Section 1003.3.
4. Stair headroom in accordance with Section 1011.3.
5. Door height in accordance with Section 1010.1.1.
6. Ramp headroom in accordance with Section 1012.5.2.

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7. The clear height of floor levels in vehicular and pedestrian traffic areas of public and private parking garages in accordance with Section 406.2.2.
8. Areas above and below mezzanine floors in accordance with Section 505.2.
9. *In Group I-2 and I-3 occupancies, the means of egress shall have a ceiling height of not less than 8 feet (2439 mm).*

1003.3 Protruding objects. Protruding objects on circulation paths shall comply with the requirements of Sections 1003.3.1 through 1003.3.4.

Exception: *In Group I-2 occupancies, protruding objects shall not extend more than 12 inches (305 mm) below the minimum ceiling height required by Section 1003.2.*

1003.3.1 Headroom. Protruding objects are permitted to extend below the minimum ceiling height required by Section 1003.2 where a minimum headroom of 80 inches (2032 mm) is provided over any circulation paths, including walks, corridors, aisles and passageways. *In other than Group I-2 occupancies,* not more than 50 percent of the ceiling area of a means of egress shall be *permitted to be* reduced in height by protruding objects.

Exception: Door closers, overhead doorstops, frame stops, power door operators and electromagnetic door locks shall be permitted to project into the door opening height not lower than 78 inches (1980 mm) above the floor.

A barrier shall be provided where the vertical clearance above a circulation path is less than 80 inches (2032 mm) high above the finished floor. The leading edge of such a barrier shall be located 27 inches (686 mm) maximum above the finished floor.

1003.3.2 Post-mounted objects. A free-standing object mounted on a post or pylon shall not overhang that post or pylon more than 4 inches (102 mm) where the lowest point of the leading edge is more than 27 inches (686 mm) and less than 80 inches (2032 mm) above the finished floor. Where a sign or other obstruction is mounted between posts or pylons and the clear distance between the posts or pylons is greater than 12 inches (305 mm), the lowest edge of such sign or obstruction shall be 27 inches (686 mm) maximum or 80 inches (2032 mm) minimum above the finished floor or ground.

Exception: These requirements shall not apply to sloping portions of handrails between the top and bottom riser of stairs and above the ramp run.

1003.3.3 Horizontal projections. Objects with leading edges more than 27 inches (685 mm) and not more than 80 inches (2030 mm) above the finished floor shall not project horizontally more than 4 inches (102 mm) into the circulation path.

Exception: Handrails are permitted to protrude $4^{1}/_{2}$ inches (114 mm) from the wall or guard.

1003.3.3.1 Horizontal projections for Group I-2 occupancies. *Structural elements, fixtures or furnishings shall not project horizontally from either side more than $1^{1}/_{2}$ inches (38 mm) into the required width of an exit access corridor serving any area caring for one or more nonambulatory or bedridden persons.*

Exceptions:

1. *Handrails are permitted to protrude $3^{1}/_{2}$ inches (89 mm) from the wall.*
2. *Alcohol-based hand-rub dispensers are permitted to protrude 4 inches.*
3. *Manual fire alarm boxes with a protective cover installed are permitted to protrude 4 inches.*

1003.3.4 Clear width. Protruding objects shall not reduce the minimum clear width of accessible routes *as required in Chapter 11A or Chapter 11B.*

1003.4 Slip-resistant surface. Circulation paths of the means of egress shall have a slip-resistant surface and be securely attached.

1003.5 Elevation change. Where changes in elevation of less than 12 inches (305 mm) exist in the means of egress, sloped surfaces shall be used. Where the slope is greater than one unit vertical in 20 units horizontal (5-percent slope), ramps complying with Section 1012 shall be used. Where the difference in elevation is 6 inches (152 mm) or less, the ramp shall be equipped with either handrails or floor finish materials that contrast with adjacent floor finish materials.

Exceptions:

1. Steps at exterior doors complying with Section 1010.1.4.
2. A stair with a single riser or with two risers and a tread is permitted at locations not required to be accessible by Chapter 11*A or 11B* where the risers and treads comply with Section 1011.5, the minimum depth of the tread is 13 inches (330 mm) and not less than one handrail complying with Section 1014 is provided within 30 inches (762 mm) of the centerline of the normal path of egress travel on the stair.
3. A step is permitted in aisles serving seating that has a difference in elevation less than 12 inches (305 mm) at locations not required to be accessible by Chapter 11*A or 11B*, provided that the risers and treads comply with Section 1030.14 and the aisle is provided with a handrail complying with Section 1030.16.

Throughout a story in a Group I-2 occupancy, any change in elevation in portions of the means of egress that serve nonambulatory persons shall be by means of a ramp or sloped walkway.

1003.6 Means of egress continuity. The path of egress travel along a means of egress shall not be interrupted by a building element other than a means of egress component as specified in this chapter. Obstructions shall not be placed in the minimum width or required capacity of a means of egress component except projections permitted by this chapter. The minimum width or required capacity of a means of egress system shall not be diminished along the path of egress travel.

1003.7 Elevators, escalators and moving walks. Elevators, escalators and moving walks shall not be used as a component of a required means of egress from any other part of the building.

Exception: Elevators used as an accessible means of egress in accordance with Section 1009.4.

SECTION 1004—OCCUPANT LOAD

1004.1 Design occupant load. In determining means of egress requirements, the number of occupants for whom means of egress facilities are provided shall be determined in accordance with this section.

1004.2 Cumulative occupant loads. Where the path of egress travel includes intervening rooms, areas or spaces, cumulative occupant loads shall be determined in accordance with this section.

1004.2.1 Intervening spaces or accessory areas. Where occupants egress from one or more rooms, areas or spaces through others, the design occupant load shall be the combined occupant load of interconnected accessory or intervening spaces. Design of egress path capacity shall be based on the cumulative portion of occupant loads of all rooms, areas or spaces to that point along the path of egress travel.

1004.2.2 Adjacent levels for mezzanines. That portion of the occupant load of a mezzanine with required egress through a room, area or space on an adjacent level shall be added to the occupant load of that room, area or space.

1004.2.3 Adjacent stories. Other than for the egress components designed for convergence in accordance with Section 1005.6, the occupant load from separate stories shall not be added.

1004.3 Multiple function occupant load. Where an area under consideration contains multiple functions having different occupant load factors, the design occupant load for such area shall be based on the floor area of each function calculated independently.

1004.4 Multiple occupancies. Where a building contains two or more occupancies, the means of egress requirements shall apply to each portion of the building based on the occupancy of that space. Where two or more occupancies utilize portions of the same means of egress system, those egress components shall meet the more stringent requirements of all occupancies that are served.

1004.5 Areas without fixed seating. The number of occupants shall be computed at the rate of one occupant per unit of area as prescribed in Table 1004.5. For areas without fixed seating, the occupant load shall be not less than that number determined by dividing the floor area under consideration by the occupant load factor assigned to the function of the space as set forth in Table 1004.5. Where an intended function is not listed in Table 1004.5, the building official shall establish a function based on a listed function that most nearly resembles the intended function.

Exception: Where approved by the building official, the actual number of occupants for whom each occupied space, floor or building is designed, although less than those determined by calculation, shall be permitted to be used in the determination of the design occupant load.

TABLE 1004.5—MAXIMUM FLOOR AREA ALLOWANCES PER OCCUPANT

FUNCTION OF SPACE	OCCUPANT LOAD FACTOR[a]
Accessory storage areas, mechanical equipment room	300 gross
Agricultural building	300 gross
Aircraft hangars	500 gross
Airport terminal	
Baggage claim	20 gross
Baggage handling	300 gross
Concourse	100 gross
Waiting areas	15 gross
Assembly	
Gaming floors (keno, slots, etc.)	11 gross
Exhibit gallery and museum	30 net
Assembly with fixed seats	See Section 1004.6
Assembly without fixed seats	
Concentrated (chairs only—not fixed)	7 net
Standing space	5 net
Unconcentrated (tables and chairs)	15 net
Bowling centers, allow 5 persons for each lane including 15 feet of runway, and for additional areas	7 net
Business areas	150 gross
Concentrated business use areas	See Section 1004.8
Courtrooms—other than fixed seating areas	40 net

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TABLE 1004.5—MAXIMUM FLOOR AREA ALLOWANCES PER OCCUPANT—continued	
FUNCTION OF SPACE	**OCCUPANT LOAD FACTOR[a]**
Day care	35 net
Dormitories	50 gross
Educational	
Classroom area	20 net
Shops and other vocational room areas	50 net
Exercise rooms	50 gross
Group H-5 fabrication and manufacturing areas	200 gross
Industrial areas	100 gross
Information technology equipment facilities	300 gross
Institutional areas[c]	
Inpatient treatment areas	240 gross
Outpatient areas	100 gross
Sleeping areas	120 gross
Kitchens, commercial	200 gross
Laboratory *Educational (K–12th grade)* *Laboratories, non-educational* *Laboratory suite[b]*	 *50 net* *100 net* *200 gross*
Library	
Reading rooms	50 net
Stack area	100 gross
Locker rooms	50 gross
Mall buildings—covered and open	See Section 402.8.2
Mercantile	60 gross
Storage, stock, shipping areas	300 gross
Parking garages	200 gross
Residential	200 gross
Skating rinks, swimming pools	
Rink and pool	50 gross
Decks	15 gross
Stages and platforms	15 net
Warehouses	500 gross

For SI: 1 foot = 304.8 mm, 1 square foot = 0.0929 m^2.

a. Floor area in square feet per occupant.

b. See Section 453.2.

c. See Table 408.3.13 for I-3 facilities.

1004.5.1 Increased occupant load. The occupant load permitted in any building, or portion thereof, is permitted to be increased from that number established for the occupancies in Table 1004.5, provided that all other requirements of the code are met based on such modified number and the occupant load does not exceed one occupant per 7 square feet (0.65 m^2) of occupiable floor space. Where required by the building official, an approved aisle, seating or fixed equipment diagram substantiating any increase in occupant load shall be submitted. Where required by the building official, such diagram shall be posted.

1004.6 Fixed seating. For areas having fixed seats and aisles, the occupant load shall be determined by the number of fixed seats installed therein. The occupant load for areas in which fixed seating is not installed, such as waiting spaces, shall be determined in accordance with Section 1004.5 and added to the number of fixed seats.

The occupant load of wheelchair spaces and the associated companion seat shall be based on one occupant for each wheelchair space and one occupant for the associated companion seat provided in accordance with Section 1109.2.3.

For areas having fixed seating without dividing arms, the occupant load shall be not less than the number of seats based on one person for each 18 inches (457 mm) of seating length.

The occupant load of seating booths shall be based on one person for each 24 inches (610 mm) of booth seat length measured at the backrest of the seating booth.

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1004.7 Outdoor areas. Yards, patios, occupiable roofs, courts and similar outdoor areas accessible to and usable by the building occupants shall be provided with means of egress as required by this chapter. The occupant load of such outdoor areas shall be assigned by the building official in accordance with the anticipated use. Where outdoor areas are to be used by persons in addition to the occupants of the building, and the path of egress travel from the outdoor areas passes through the building, means of egress requirements for the building shall be based on the sum of the occupant loads of the building plus the outdoor areas.

Exceptions:

1. Outdoor areas used exclusively for service of the building need only have one means of egress.
2. Both outdoor areas associated with Group R-3 and individual dwelling units of Group R-2.

1004.8 Concentrated business use areas. The occupant load factor for concentrated business use shall be applied to telephone call centers, trading floors, electronic data entry and similar business use areas with a higher density of occupants than would normally be expected in a typical business occupancy environment. Where approved by the building official, the occupant load for concentrated business use areas shall be the actual occupant load, but not less than one occupant per 50 square feet (4.65 m^2) of gross occupiable floor space.

1004.9 Posting of occupant load. Every room or space *which is used for assembly, classroom, dining, drinking or similar purposes having an occupant load of 50 or more* shall have the occupant load of the room or space posted in a conspicuous place, near the main exit or exit access doorway from the room or space, for the intended configurations. Posted signs shall be of an approved legible permanent design and shall be maintained by the owner or the owner's authorized agent.

SECTION 1005—MEANS OF EGRESS SIZING

1005.1 General. All portions of the means of egress system shall be sized in accordance with this section.

Exception: Aisles and aisle accessways in rooms or spaces used for assembly purposes complying with Section 1030.

1005.2 Minimum width based on component. The minimum width, in inches (mm), of any means of egress components shall be not less than that specified for such component, elsewhere in this code.

1005.3 Required capacity based on occupant load. The required capacity, in inches (mm), of the means of egress for any room, area, space or story shall be not less than that determined in accordance with Sections 1005.3.1 and 1005.3.2.

1005.3.1 Stairways. The capacity, in inches, of means of egress stairways shall be calculated by multiplying the occupant load served by such stairways by a means of egress capacity factor of 0.3 inch (7.6 mm) per occupant. Where stairways serve more than one story, only the occupant load of each story considered individually shall be used in calculating the required capacity of the stairways serving that story.

Exceptions:

1. For other than Group H and I-2 occupancies, the capacity, in inches, of means of egress stairways shall be calculated by multiplying the occupant load served by such stairways by a means of egress capacity factor of 0.2 inch (5.1 mm) per occupant in buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2 and an emergency voice/alarm communication system in accordance with Section 907.5.2.2.
2. Facilities with smoke-protected assembly seating shall be permitted to use the capacity factors in Table 1030.6.2 indicated for stepped aisles for exit access or exit stairways where the entire path for means of egress from the seating to the exit discharge is provided with a smoke control system complying with Section 909.
3. Facilities with open-air assembly seating shall be permitted to the capacity factors in Section 1030.6.3 indicated for stepped aisles for exit access or exit stairways where the entire path for means of egress from the seating to the exit discharge is open to the outdoors.
4. *For Group H-1, H-2, H-3 and H-4 occupancies the total width of means of egress in inches (mm) shall not be less than the total occupant load served by the means of egress multiplied by 0.7 inches (7.62 mm) per occupant.*

1005.3.2 Other egress components. The capacity, in inches, of means of egress components other than stairways shall be calculated by multiplying the occupant load served by such component by a means of egress capacity factor of 0.2 inch (5.1 mm) per occupant.

Exceptions:

1. For other than Group H and I-2 occupancies, the capacity, in inches, of means of egress components other than stairways shall be calculated by multiplying the occupant load served by such component by a means of egress capacity factor of 0.15 inch (3.8 mm) per occupant in buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2 and an emergency voice/alarm communication system in accordance with Section 907.5.2.2.
2. Facilities with smoke-protected assembly seating shall be permitted to use the capacity factors in Table 1030.6.2 indicated for level or ramped aisles for means of egress components other than stairways where the entire path for means of egress from the seating to the exit discharge is provided with a smoke control system complying with Section 909.

3. Facilities with open-air assembly seating shall be permitted to the capacity factors in Section 1030.6.3 indicated for level or ramped aisles for means of egress components other than stairways where the entire path for means of egress from the seating to the exit discharge is open to the outdoors.
4. *For Group H-1, H-2, H-3 and H-4 occupancies the total width of means of egress in inches (mm) shall not be less than the total occupant load served by the means of egress multiplied by 0.4 inches (5.08 mm) per occupant.*

1005.4 Continuity. The minimum width or required capacity of the means of egress required from any story of a building shall not be reduced along the path of egress travel until arrival at the public way.

1005.5 Distribution of minimum width and required capacity. Where more than one exit, or access to more than one exit, is required, the means of egress shall be configured such that the loss of any one exit, or access to one exit, shall not reduce the available capacity or width to less than 50 percent of the required capacity or width.

1005.6 Egress convergence. Where the means of egress from stories above and below converge at an intermediate level, the capacity of the means of egress from the point of convergence shall be not less than the largest minimum width or the sum of the required capacities for the stairways or ramps serving the two adjacent stories, whichever is larger.

1005.7 Encroachment. Encroachments into the required means of egress width shall be in accordance with the provisions of this section.

1005.7.1 Doors. Doors, when fully opened, shall not reduce the required width by more than 7 inches (178 mm). Doors in any position shall not reduce the required width by more than one-half.

Exceptions:

1. *In other than Group I-2 occupancies,* surface-mounted latch release hardware shall be exempt from inclusion in the 7-inch maximum (178 mm) encroachment where both of the following conditions exist:
   1.1. The hardware is mounted to the side of the door facing away from the adjacent wall where the door is in the open position.
   1.2. The hardware is mounted not less than 34 inches (865 mm) nor more than 48 inches (1219 mm) above the finished floor.
2. The restrictions on door swing shall not apply to doors within individual dwelling units and sleeping units of Group R-2 occupancies and dwelling units of Group R-3 occupancies.

1005.7.2 Other projections. Handrail projections shall be in accordance with the provisions of Section 1014.9. Other nonstructural projections such as trim and similar decorative features shall be permitted to project into the required width not more than $1^1/_2$ inches (38 mm) on each side.

1005.7.3 Protruding objects. Protruding objects shall comply with the applicable requirements of Section 1003.3.

SECTION 1006—NUMBER OF EXITS AND EXIT ACCESS DOORWAYS

1006.1 General. The number of exits or exit access doorways required within the means of egress system shall comply with the provisions of Section 1006.2 for spaces, including mezzanines, and Section 1006.3 for stories or occupiable roofs.

1006.2 Egress from spaces. Rooms, areas or spaces, including mezzanines, within a story or basement shall be provided with the number of exits or access to exits in accordance with this section.

1006.2.1 Egress based on occupant load and common path of egress travel distance. Two exits or exit access doorways from any space shall be provided where the design occupant load or the common path of egress travel distance exceeds the values listed in Table 1006.2.1. The cumulative occupant load from adjacent rooms, areas or spaces shall be determined in accordance with Section 1004.2.

Exceptions:

1. The number of exits from foyers, lobbies, vestibules or similar spaces need not be based on cumulative occupant loads for areas discharging through such spaces, but the capacity of the exits from such spaces shall be based on applicable cumulative occupant loads.
2. *Rooms and* care suites in Group I-2 occupancies complying with Section 407.4.
3. Unoccupied mechanical rooms and penthouses are not required to comply with the common path of egress travel distance measurement.
4. *In detention and correctional facilities and holding cells, such as are found in courthouse buildings, when the occupant load is more than 20 see Section 408.3.11.*

TABLE 1006.2.1—SPACES WITH ONE EXIT OR EXIT ACCESS DOORWAY

OCCUPANCY	MAXIMUM OCCUPANT LOAD OF SPACE	MAXIMUM COMMON PATH OF EGRESS TRAVEL DISTANCE (feet)		
		Without Automatic Sprinkler System (feet)		With Automatic Sprinkler System (feet)
		Occupant Load		
		OL ≤ 30	OL > 30	
A[c], E, M	49	75	75	75[a]
B	49	100	75	100[a]
F	49	75	75	100[a]
H-1, H-2, H-3	3	NP	NP	25[b]
H-4, H-5	10	NP	NP	75[b]
I-2[d], I-4	10	NP[i]	NP[i]	75[a]
I-3[h]	10	NP	NP	100[a]
R-1	10	NP	NP	75[a]
R-2	20	NP	NP	125[a]
R-2.1	*10*	*NP*	*NP*	*75[a]*
R-2.2	*20*	*NP*	*NP*	*125[a]*
R-3[e], *R-3.1*[e]	20	NP	NP	125[a, g]
R-4[e]	20	NP	NP	125[a, g]
S[f]	29	100	75	100[a]
U	49	100	75	75[a]
L	*See Section 453.6.1*		*NP*	*NP*

For SI: 1 foot = 304.8 mm.

NP = Not Permitted.

a. Buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2. See Section 903 for occupancies where automatic sprinkler systems are permitted in accordance with Section 903.3.1.2.

b. Group H occupancies equipped throughout with an automatic sprinkler system in accordance with Section 903.2.5.

c. For a room or space used for assembly purposes having fixed seating, see Section 1030.8.

d. For the travel distance limitations *and number of exit and exit access requirements for rooms and spaces* in Group I-2, see Section 407.4.

e. The common path of egress travel distance shall only apply in a Group R-3 occupancy located in a mixed occupancy *building*.

f. The length of common path of egress travel distance in a Group S-2 open parking garage shall be not more than 100 feet.

g. For the travel distance limitations in Groups R-3 and R-4 equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.3, see Section 1006.2.2.6.

h. For holding cells, see Section 408.3.11.

i. In accordance with Health and Safety Code Section 13113(d), there is no requirement for automatic sprinkler protection in an existing Group I-2 located in Type IA construction.

1006.2.1.1 Three or more exits or exit access doorways. Three exits or exit access doorways shall be provided from any space with an occupant load of 501 to 1,000. Four exits or exit access doorways shall be provided from any space with an occupant load greater than 1,000.

1006.2.2 Egress based on use. The numbers, configuration and types of components of exits or access to exits shall be provided in the uses described in Sections 1006.2.2.1 through *1006.2.2.7*.

1006.2.2.1 Boiler, incinerator and furnace rooms. Two exit access doorways are required in boiler, incinerator and furnace rooms where the area is over 500 square feet (46 m^2) and any fuel-fired equipment exceeds 400,000 British thermal units (Btu) (422 000 KJ) input capacity. Where two exit access doorways are required, one is permitted to be a fixed ladder or an alternating tread device. Exit access doorways shall be separated by a horizontal distance equal to one-half the length of the maximum overall diagonal dimension of the room.

1006.2.2.2 Refrigeration machinery rooms. Machinery rooms larger than 1,000 square feet (93 m^2) shall have not less than two exits or exit access doorways. Where two exit access doorways are required, one such doorway is permitted to be served by a fixed ladder or an alternating tread device. Exit access doorways shall be separated by a horizontal distance equal to one-half the maximum horizontal dimension of the room.

Exit access travel distance shall be determined as specified in Section 1017.1, but all portions of a refrigeration machinery room shall be within 150 feet (45 720 mm) of an exit or exit access doorway where such rooms are not protected by an approved automatic sprinkler system. Egress is allowed through adjoining refrigeration machinery rooms or adjoining refrigerated rooms or spaces.

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Exit and exit access doorways shall swing in the direction of egress travel and shall be equipped with panic hardware, regardless of the occupant load served. Exit and exit access doorways shall be tight fitting and self-closing.

1006.2.2.3 Refrigerated rooms or spaces. Rooms or spaces having a floor area larger than 1,000 square feet (93 m^2), containing a refrigerant evaporator and maintained at a temperature below 68°F (20°C), shall have access to not less than two exits or exit access doorways.

Exit access travel distance shall be determined as specified in Section 1017.1. *All* portions of a refrigerated room or space shall be within 150 feet (45 720 mm) of an exit or exit access doorway *leading to a nonrefrigerated area* where such rooms are not protected by an approved automatic sprinkler system. Egress is allowed through adjoining refrigerated rooms or spaces.

Exception: Where using refrigerants in quantities limited to the amounts based on the volume set forth in the *California Mechanical Code. Egress is allowed through adjoining refrigerated rooms or spaces.*

1006.2.2.4 Electrical rooms. The location and number of exit or exit access doorways shall be provided for electrical rooms in accordance with Section 110.26 of *the California Electrical Code* for electrical equipment rated 1,000 volts or less, and Section 110.33 of *the California Electrical Code* for electrical equipment rated over 1,000 volts. Panic hardware shall be provided where required in accordance with Section 1010.2.8.2.

1006.2.2.5 Vehicular ramps. Vehicular ramps shall not be considered as an exit access ramp unless pedestrian facilities are provided.

1006.2.2.6 Groups R-3 and R-4. Where Group R-3 occupancies are permitted by Section 903.2.8 to be protected by an automatic sprinkler system installed in accordance with Section 903.3.1.3, the exit access travel distance for Group R-3 shall be not more than 125 feet (38 100 mm). Where Group R-4 occupancies are permitted by Section 903.2.8 to be protected by an automatic sprinkler system installed in accordance with Section 903.3.1.3, the exit access travel distance for Group R-4 shall be not more than 75 feet (22 860 mm).

1006.2.2.7 Large family day-care home. *Every story or basement of a large family day-care home shall be provided with two exits which are remotely located from each other. Every required exit shall be of a size to permit the installation of a door not less than 32 inches (813 mm) in clear width and not less than 6 feet 8 inches (2,032 mm) in height. A manually operated horizontal sliding door may be used as one of the two required exits.*

Where basements are used for day-care purposes, one of the two required exits shall provide access directly to the exterior without entering the first story. The second exit from the basement may either pass through the story above or exit directly to the exterior.

Rooms used for day-care purposes shall not be located above the first story.

Exception: *Buildings equipped with an automatic sprinkler system throughout and which have at least one of the required exits providing access directly to the exterior. NFPA 13R may be used in large family day-care homes. The sprinkler omissions of NFPA 13R shall not apply unless approved by the enforcing agency.*

Exit doors, including manually operated horizontal sliding doors, shall be openable from the inside without use of a key or any special knowledge or effort.

Tables 1006.3.3(1) and 1006.3.3(2) are not applicable to this occupancy classification.

1006.2.2.8 Group I-4 means of egress. *Group I-4 facilities, rooms or spaces where care is provided for more than 10 children that are 36 months of age or less shall have access to not less than two exits or exit access doorways.*

1006.3 Egress from stories or occupiable roofs. All spaces located on a story or occupiable roof shall have access to the required number of separate and distinct exits or access to exits based on the aggregate occupant load served in accordance with this section.

1006.3.1 Occupant load. Where stairways serve more than one story, or more than one story and an occupiable roof, only the occupant load of each story or occupiable roof, considered individually, shall be used when calculating the required number of exits or access to exits serving that story.

1006.3.2 Path of egress travel. The path of egress travel to an exit shall not pass through more than one adjacent story.

Exception: The path of egress travel to an exit shall be permitted to pass through more than one adjacent story in any of the following:

1. In Group R-1, R-2 or R-3 occupancies, exit access stairways and ramps connecting four stories or less serving and contained within an individual dwelling unit, sleeping unit or live/work unit.
2. Exit access stairways serving and contained within a Group R-3 congregate residence or a Group R-4 facility.
3. Exit access stairways and ramps within an atrium complying with Section 404.
4. Exit access stairways and ramps in open parking garages that serve only the parking garage.
5. Exit access stairways and ramps serving smoke-protected assembly seating and open-air assembly seating complying with the exit access travel distance requirements of Section 1030.7.
6. Exit access stairways and ramps between the balcony, gallery or press box and the main assembly floor in occupancies such as theaters, places of religious worship, auditoriums and sports facilities.
7. Exterior exit access stairways and ramps between occupiable roofs.

1006.3.3 Egress based on occupant load. Each story and occupiable roof shall have the minimum number of separate and distinct exits, or access to exits, as specified in Table 1006.3.3. A single exit or access to a single exit shall be permitted in accor-

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dance with Section 1006.3.4. The required number of exits, or exit access stairways or ramps providing access to exits, from any story or occupiable roof shall be maintained until arrival at the exit discharge or a public way.

TABLE 1006.3.3—MINIMUM NUMBER OF EXITS OR ACCESS TO EXITS PER STORY OR OCCUPIABLE ROOFS

OCCUPANT LOAD PER STORY OR OCCUPIABLE ROOF	MINIMUM NUMBER OF EXITS OR ACCESS TO EXITS PER STORY OR OCCUPIABLE ROOF
1-500	2
501-1,000	3
More than 1,000	4

1006.3.4 Single exits. A single exit or access to a single exit shall be permitted from any story or occupiable roof where one of the following conditions exists:

1. The occupant load, number of dwelling units and exit access travel distance do not exceed the values in Table 1006.3.4(1) or 1006.3.4(2).
2. Rooms, areas and spaces complying with Section 1006.2.1 with exits that discharge directly to the exterior at the level of exit discharge, are permitted to have one exit or access to a single exit.
3. Parking garages where vehicles are mechanically parked shall be permitted to have one exit or access to a single exit.
4. Group R-3 and R-4 occupancies shall be permitted to have one exit or access to a single exit.
5. Individual single-story or multistory dwelling units shall be permitted to have a single exit or access to a single exit from the dwelling unit provided that both of the following criteria are met:
   5.1. The dwelling unit complies with Section 1006.2.1 as a space with one means of egress.
   5.2. Either the exit from the dwelling unit discharges directly to the exterior at the level of exit discharge, or the exit access outside the dwelling unit's entrance door provides access to not less than two approved independent exits.

TABLE 1006.3.4(1)—STORIES AND OCCUPIABLE ROOFS WITH ONE EXIT OR ACCESS TO ONE EXIT FOR R-2 *AND R-3* OCCUPANCIES

STORY OR OCCUPIABLE ROOF	OCCUPANCY	MAXIMUM NUMBER OF DWELLING UNITS	MAXIMUM EXIT ACCESS TRAVEL DISTANCE
Basement, first, second or third story above grade plane and occupiable roofs over the first or second story above grade plane	R-2[a, b, c] *R-3*[a]	4 dwelling units *NA*	125 feet *NA*
Fourth story above grade plane and higher	*R-3*[a]	NA	*125 feet*

For SI: 1 foot = 304.8 mm.
NP = Not Permitted.
NA = Not Applicable.
a. Buildings classified as Group R-2 equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2 and provided with emergency escape and rescue openings in accordance with Section 1031.
b. This table is used for Group R-2 occupancies consisting of dwelling units. For Group R-2 occupancies consisting of sleeping units, use Table 1006.3.4(2).
c. This table is for occupiable roofs accessed through and serving individual dwelling units in Group R-2 occupancies. For Group R-2 occupancies with occupiable roofs that are not accessed through and serving individual units, use Table 1006.3.4(2).

TABLE 1006.3.4(2)—STORIES AND OCCUPIABLE ROOFS WITH ONE EXIT OR ACCESS TO ONE EXIT FOR OTHER OCCUPANCIES

STORY AND OCCUPIABLE ROOF	OCCUPANCY[e]	MAXIMUM OCCUPANT LOAD PER STORY AND OCCUPIABLE ROOF	MAXIMUM EXIT ACCESS TRAVEL DISTANCE (feet)
First story above or below grade plane and occupiable roofs over the first story above grade plane	A, B[b], E, F[b], M, U	49	75
	H-2, H-3	3	25
	H-4, H-5, I, R-1, R-2[a, c], *R-2.2*	10	75
	I-2	*7*	*50*
	S[b, d]	29	75
Second story above grade plane	B, F, M, S[d]	29	75
Third story above grade plane and higher	NP	NA	NA

For SI: 1 foot = 304.8 mm.
NP = Not Permitted.
NA = Not Applicable.
a. Buildings classified as Group R-2 equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2 and provided with emergency escape and rescue openings in accordance with Section 1031.
b. Group B, F and S occupancies in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or an occupiable roof of such buildings shall have a maximum exit access travel distance of 100 feet.
c. This table is used for Group R-2 occupancies consisting of sleeping units. For Group R-2 occupancies consisting of dwelling units, use Table 1006.3.4(1).
d. The length of exit access travel distance in a Group S-2 open parking garage shall be not more than 100 feet.
e. *For Group L Occupancies see Section 453.6.1.*

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1006.3.4.1 Mixed occupancies. Where one exit, or exit access stairway or ramp providing access to exits at other stories, is permitted to serve individual stories, mixed occupancies shall be permitted to be served by single exits provided that each individual occupancy complies with the applicable requirements of Table 1006.3.4(1) or 1006.3.4(2) for that occupancy. Where applicable, cumulative occupant loads from adjacent occupancies shall be considered to be in accordance with the provisions of Section 1004.1. In each story of a mixed occupancy building, the maximum number of occupants served by a single exit shall be such that the sum of the ratios of the calculated number of occupants of the space divided by the allowable number of occupants indicated in Table 1006.3.4(2) for each occupancy does not exceed one. Where dwelling units are located on a story with other occupancies, the actual number of dwelling units divided by four plus the ratio from the other occupancy does not exceed one.

SECTION 1007—EXIT AND EXIT ACCESS DOORWAY CONFIGURATION

1007.1 General. Exits, exit access doorways, and exit access stairways and ramps serving spaces, including individual building stories, shall be separated in accordance with the provisions of this section.

1007.1.1 Two exits or exit access doorways. Where two exits, exit access doorways, exit access stairways or ramps, or any combination thereof, are required from any portion of the exit access, they shall be placed a distance apart equal to not less than one-half of the length of the maximum overall diagonal dimension of the building or area to be served measured in a straight line between them. Interlocking or scissor stairways shall be counted as one exit stairway.

Exceptions:

1. Where interior exit stairways or ramps are interconnected by a 1-hour fire-resistance-rated corridor conforming to the requirements of Section 1020, the required exit separation shall be measured along the shortest direct line of travel within the corridor.
2. Where a building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2, the separation distance shall be not less than one-third of the length of the maximum overall diagonal dimension of the area served.

1007.1.1.1 Measurement point. The separation distance required in Section 1007.1.1 shall be measured in accordance with the following:

1. The separation distance to exit or exit access doorways shall be measured to any point along the width of the doorway.
2. The separation distance to exit access stairways shall be measured to the closest riser.
3. The separation distance to exit access ramps shall be measured to the start of the ramp run.

1007.1.2 Three or more exits or exit access doorways. Where access to three or more exits is required, not less than two exit or exit access doorways shall be arranged in accordance with the provisions of Section 1007.1.1. Additional required exit or exit access doorways shall be arranged a reasonable distance apart so that if one becomes blocked, the others will be available.

1007.1.3 Remoteness of exit access stairways or ramps. Where two exit access stairways or ramps provide the required means of egress to exits at another story, the required separation distance shall be maintained for all portions of such exit access stairways or ramps.

1007.1.3.1 Three or more exit access stairways or ramps. Where more than two exit access stairways or ramps provide the required means of egress, not less than two shall be arranged in accordance with Section 1007.1.3.

SECTION 1008 —MEANS OF EGRESS ILLUMINATION

1008.1 Means of egress illumination. Illumination shall be provided in the means of egress in accordance with Section 1008.2. In the event of power supply failure, means of egress illumination shall comply with Section 1008.3.

1008.2 Illumination required. The means of egress serving a room or space shall be illuminated at all times that the room or space is occupied.

Exceptions:

1. Occupancies in Group U.
2. Self-service storage units 400 square feet (37.2 m^2) or less in area and accessed directly from the exterior of the building.
3. Aisle accessways in Group A.
4. Dwelling units and sleeping units in Groups R-1, R-2 and R-3.
5. Sleeping units of Group I, *R-2.1 and R-4* occupancies.

1008.2.1 Illumination level under normal power. The means of egress illumination level shall be not less than 1 footcandle (11 lux) at the walking surface. Along exit access stairways, exit stairways and at their required landings, the illumination level shall not be less than 10 footcandles (108 lux) at the walking surface when the stairway is in use.

Exception: For auditoriums, theaters, concert or opera halls and similar assembly occupancies, the illumination at the walking surface is permitted to be reduced during performances by one of the following methods provided that the required illumination is automatically restored upon activation of a premises' fire alarm system:

1. Externally illuminated walking surfaces shall be permitted to be illuminated to not less than 0.2 footcandle (2.15 lux).

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2. Steps, landings and the sides of ramps shall be permitted to be marked with self-luminous materials in accordance with Sections 1025.2.1, 1025.2.2 and 1025.2.4 by systems listed in accordance with UL 1994.

1008.2.2 Group I-2. In Group I-2 occupancies where two or more exits are required, on the exterior landings required by Section 1010.1.5, means of egress illumination levels for the exit discharge shall be provided such that failure of a single lamp in a luminaire shall not reduce the illumination level on that landing to less than 1 footcandle (11 lux).

1008.2.3 Exit discharge. Illumination shall be provided along the path of travel for the exit discharge from each exit to the public way.

Exception: Illumination shall not be required where the path of the exit discharge meets both of the following requirements:

1. The path of exit discharge is illuminated from the exit to a safe dispersal area complying with Section 1028.5.
2. A dispersal area shall be illuminated to a level not less than 1 footcandle (11 lux) at the walking surface.

1008.2.4 Power for illumination. The power supply for means of egress illumination shall normally be provided by the premises' electrical supply.

1008.3 Illumination required by an emergency electrical system. An emergency electrical system shall be provided to automatically illuminate the following areas in the event of a power supply failure:

1. In rooms or spaces that require two or more exits or access to exits:
   - 1.1. Aisles.
   - 1.2. Corridors.
   - 1.3. Exit access stairways and ramps.
2. In buildings that require two or more exits or access to exits:
   - 2.1. Interior exit access stairways and ramps.
   - 2.2. Interior and exterior exit stairways and ramps.
   - 2.3. Exit passageways.
   - 2.4. Vestibules and areas on the level of discharge used for exit discharge in accordance with Section 1028.2.
   - 2.5. Exterior landings as required by Section 1010.1.5 for exit doorways that lead directly to the exit discharge.
   - *2.6. Group I-2 exit discharge stairways, ramps, aisles, walkways and escalators leading to a public way or to a safe dispersal area in accordance with Section 1028.5.*
3. In other rooms and spaces:
   - 3.1. Electrical equipment rooms.
   - 3.2. Fire command centers.
   - 3.3. Fire pump rooms.
   - 3.4. Generator rooms.
   - 3.5. Public restrooms with an area greater than 300 square feet (27.87 m^2).
4. *Group I-2 exit discharge stairways, ramps, aisles, walkways and escalators leading to a public way or to a safe dispersal area in accordance with Section 1028.5.*

1008.3.1 Duration. The emergency power system shall provide power for a duration of not less than 90 minutes and shall consist of storage batteries, unit equipment or an on-site generator. The installation of the emergency power system shall be in accordance with Section 2702.

1008.3.2 Illumination level under emergency power. Emergency lighting facilities shall be arranged to provide initial illumination that is not less than an average of 1 footcandle (11 lux) and a minimum at any point of 0.1 footcandle (1 lux) measured along the path of egress at floor level. Illumination levels shall be permitted to decline to 0.6 footcandle (6 lux) average and a minimum at any point of 0.06 footcandle (0.6 lux) at the end of the emergency lighting time duration. A maximum-to-minimum illumination uniformity ratio of 40 to 1 shall not be exceeded. In Group I-2 occupancies, failure of a single lamp in a luminaire shall not reduce the illumination level to less than 0.2 footcandle (2.2 lux).

SECTION 1009—ACCESSIBLE MEANS OF EGRESS

1009.1 Accessible means of egress required. Accessible means of egress shall comply with this section. Accessible spaces shall be provided with not less than one accessible means of egress. Where more than one means of egress is required by Section 1006.2 or 1006.3 from any accessible space, each accessible portion of the space shall be served by not less than two accessible means of egress *in at least the same number as required by Sections 1006.2 or 1006.3. In addition to the requirements of this chapter, means of egress, which provide access to, or egress from, buildings for persons with disabilities, shall also comply with the requirements of Chapter 11A or 11B as applicable.*

Exceptions:

1. One accessible means of egress is required from an accessible mezzanine level in accordance with Section 1009.3, 1009.4 or 1009.5, *and Chapter 11A or 11B, as applicable.*
2. In assembly areas with ramped aisles or stepped aisles, one accessible means of egress is permitted where the common path of egress travel is accessible and meets the requirements in Section 1030.8 *and Chapter 11A or 11B, as applicable.*

1009.2 Continuity and components. Each required accessible means of egress shall be continuous to a public way and shall consist of one or more of the following components:

1. Accessible routes complying with *Chapter 11A, Sections 1110A.1 and 1119A, or Chapter 11B, Sections 11B-206 and 11B-402, as applicable.*
2. Interior exit stairways complying with Sections 1009.3 and 1023, *and Chapter 11A, Section 1123A, or Chapter 11B, Sections 11B-210 and 11B-504, as applicable.*
3. Exit access stairways complying with Sections 1009.3 and 1019.3 or 1019.4, *and Chapter 11A, Section 1123A, or Chapter 11B, Sections 11B-210 and 11B-504, as applicable.*
4. Exterior exit stairways complying with Sections 1009.3 and 1027, *Chapter 11A, Section 1115A, or Chapter 11B, Sections 11B-210 and 11B-504, as applicable,* and serving levels other than the level of exit discharge.
5. Elevators complying with Section 1009.4, *and Chapter 11A, Section 1124A, or Chapter 11B, Sections 11B-206.6 and 11B-407, as applicable.*
6. Platform lifts complying with Section 1009.5, *and Chapter 11A, Section 1124A, or Chapter 11B, Sections 11B-206.7, 11B-207.2 and 11B-410, as applicable.*
7. Horizontal exits complying with Section 1026.
8. Ramps complying with Section 1012, *and Chapter 11A, Sections 1114A and 1122A, or Chapter 11B, 11B-405, as applicable.*
9. Areas of refuge complying with Section 1009.6.
10. Exterior areas for assisted rescue complying with Section 1009.7 serving exits at the level of exit discharge.
11. *Safe dispersal areas where they are allowed under Section 1028.5.*

1009.2.1 Elevators required. In buildings where a required accessible floor is four or more stories above or below a level of exit discharge or where an accessible occupiable roof is above a story that is three or more stories above the level of exit discharge, not less than one required accessible means of egress shall include an elevator complying with Section 1009.4.

Exceptions:

1. In buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2, the elevator shall not be required as part of the accessible means of egress on floors provided with a horizontal exit and located at or above the levels of exit discharge.
2. In buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2, the elevator shall not be required as part of the accessible means of egress on floors or occupiable roofs provided with a ramp conforming to the provisions of Section 1012.

1009.2.2 Doors. Where doors are part of an accessible route to provide access to an exit, area of refuge or exterior area of assisted rescue, maneuvering clearances shall be provided at such doors as required by ICC A117.1 in the direction of egress. Where doors lead to an area of refuge or exterior area for assisted rescue and reentry to the floor is possible, door maneuvering clearances shall be provided on both sides of the door.

Exception: Maneuvering clearances are not required at doors to exit stairways for levels above and below the level of exit discharge where the exit enclosure does not include an area of refuge.

1009.3 Stairways. In order to be considered part of an accessible means of egress, a stairway between stories shall comply with Sections 1009.3.1 through 1009.3.3. ***[DSA-AC & HCD 1-AC]*** *In addition, exit stairways shall comply with Chapter 11A, Sections 1115A and 1123A, or Chapter 11B, Sections 11B-210 and 11B-504, as applicable.*

1009.3.1 Exit access stairways. Exit access stairways that connect levels in the same story are not permitted as part of an accessible means of egress.

Exception: Exit access stairways providing means of egress from mezzanines are permitted as part of an accessible means of egress.

1009.3.2 Stairway width. Stairways shall have a clear width of 48 inches (1219 mm) minimum between handrails.

Exceptions:

1. The clear width of 48 inches (1219 mm) between handrails is not required in buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2.
2. The clear width of 48 inches (1219 mm) between handrails is not required for stairways accessed from a refuge area in conjunction with a horizontal exit.

1009.3.3 Area of refuge. Stairways shall either incorporate an area of refuge within an enlarged floor-level landing or shall be accessed from an area of refuge complying with Section 1009.6.

Exceptions:

1. Areas of refuge are not required at exit access stairways where two-way communication is provided at the elevator landing in accordance with Section 1009.8.
2. Areas of refuge are not required at stairways in buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2.
3. Areas of refuge are not required at stairways serving open parking garages.

4. Areas of refuge are not required for smoke-protected or open-air assembly seating areas complying with Sections 1030.6.2 and 1030.6.3.
5. Areas of refuge are not required at stairways in Group R-2 occupancies.
6. Areas of refuge are not required for stairways accessed from a refuge area in conjunction with a horizontal exit.

1009.4 Elevators. In order to be considered part of an accessible means of egress, an elevator shall comply with Sections 1009.4.1 and 1009.4.2.

1009.4.1 Standby power. The elevator shall meet the emergency operation and signaling device requirements of *California Code of Regulations, Title 8, Division 1, Chapter 4, Subchapter 6, Elevator Safety Orders.* Standby power shall be provided in accordance with Chapter 27 and Section 3003.

1009.4.2 Area of refuge. The elevator shall be accessed from an area of refuge complying with Section 1009.6.

Exceptions:

1. Areas of refuge are not required at the elevator in open parking garages.
2. Areas of refuge are not required in buildings and facilities equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2.
3. Areas of refuge are not required at elevators not required to be located in a shaft in accordance with Section 712.
4. Areas of refuge are not required at elevators serving smoke-protected or open-air assembly seating areas complying with Sections 1030.6.2 and 1030.6.3.
5. Areas of refuge are not required for elevators accessed from a refuge area in conjunction with a horizontal exit.

1009.5 Platform lifts. Platform lifts shall be permitted to serve as part of an accessible means of egress where allowed as part of a required accessible route in *Chapter 11A, Sections 1121A and 1124A.11, or Chapter 11B, Sections 11B-206.7.1 through 11B-206.7.10, as applicable.* Standby power for the platform lift shall be provided in accordance with Chapter 27.

[DSA-AC] *See Chapter 11B, Section 11B-207.2 for additional accessible means of egress requirements at platform lifts.*

1009.6 Areas of refuge. Every required area of refuge shall be accessible from the space it serves by an accessible means of egress.

[DSA-AC] *Areas of refuge shall comply with the requirements of this code and shall adjoin an accessible route complying with Sections 11B-206 and 11B-402.*

1009.6.1 Travel distance. The maximum travel distance from any accessible space to an area of refuge shall not exceed the exit access travel distance permitted for the occupancy in accordance with Section 1017.1.

1009.6.2 Stairway or elevator access. Every required area of refuge shall have direct access to a stairway complying with Sections 1009.3 and 1023 or an elevator complying with Section 1009.4.

Exception: An interior area of refuge at the level of exit discharge that provides direct access to an exterior exit door.

1009.6.3 Size. Each area of refuge shall be sized to accommodate *two* wheelchair spaces *that are not less than* 30 inches by 52 inches (762 mm by 1320 mm). *The total number of such 30-inch by 52-inch (762 mm by 1320 mm) spaces per story shall be not less than one for every 200 persons of calculated occupant load served by the area of refuge.* Such wheelchair spaces shall not reduce the means of egress minimum width or required capacity. Access to any of the required wheelchair spaces in an area of refuge shall not be obstructed by more than one adjoining wheelchair space.

Exception: *The enforcing agency may reduce the size of each required area of refuge to accommodate one wheelchair space that is not less than 30 inches by 52 inches (762 mm by 1320 mm) on floors where the occupant load is less than 200.*

1009.6.4 Separation. Each area of refuge shall be separated from the remainder of the story by a smoke barrier complying with Section 709 or a horizontal exit complying with Section 1026. Each area of refuge shall be designed to minimize the intrusion of smoke.

Exceptions:

1. Areas of refuge located within an enclosure for interior exit stairways complying with Section 1023.
2. Areas of refuge in outdoor facilities where exit access is essentially open to the outside.

1009.6.5 Two-way communication. Areas of refuge shall be provided with a two-way communication system complying with Sections 1009.8.1 and 1009.8.2.

1009.7 Exterior areas for assisted rescue. Exterior areas for assisted rescue shall be accessed by an accessible route from the area served.

Where the exit discharge does not include an accessible route from an exit located on the level of exit discharge to a public way, an exterior area of assisted rescue shall be provided on the exterior landing in accordance with Sections 1009.7.1 through 1009.7.4.

1009.7.1 Size. Each exterior area for assisted rescue shall be sized to accommodate wheelchair spaces in accordance with Section 1009.6.3.

1009.7.2 Separation. Exterior walls separating the exterior area of assisted rescue from the interior of the building shall have a minimum fire-resistance rating of 1 hour, rated for exposure to fire from the inside. The fire-resistance-rated exterior wall construction shall extend horizontally not less than 10 feet (3048 mm) beyond the landing on either side of the landing or equivalent fire-resistance-rated construction is permitted to extend out perpendicular to the exterior wall not less than 4 feet (1219 mm) on the side of the landing. The fire-resistance-rated construction shall extend vertically from the ground to a point not less than 10

feet (3048 mm) above the floor level of the area for assisted rescue or to the roof line, whichever is lower. Openings within such fire-resistance-rated exterior walls shall be protected in accordance with Section 716.

Exception: The fire-resistance rating and opening protectives are not required in the exterior wall where the building is equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2.

1009.7.3 Openness. The exterior area for assisted rescue shall be open to the outside air. The sides other than the separation walls shall be not less than 50 percent open, and the open area shall be distributed so as to minimize the accumulation of smoke or toxic gases.

1009.7.4 Stairways. Stairways that are part of the means of egress for the exterior area for assisted rescue shall provide a minimum clear width of 48 inches (1219 mm) between handrails.

Exception: The minimum clear width of 48 inches (1219 mm) between handrails is not required at stairways serving buildings equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2.

1009.8 Two-way communication. A two-way communication system complying with Sections 1009.8.1 and 1009.8.2 shall be provided at the landing serving each elevator or bank of elevators on each accessible floor that is one or more stories above or below the level of exit discharge.

Exceptions:

1. Two-way communication systems are not required at the landing serving each elevator or bank of elevators where the two-way communication system is provided within areas of refuge in accordance with Section 1009.6.5.
2. Two-way communication systems are not required on floors provided with ramps conforming to the provisions of Section 1012.
3. Two-way communication systems are not required at the landings serving only service elevators that are not designated as part of the accessible means of egress or serve as part of the required accessible route into a facility.
4. Two-way communication systems are not required at the landings serving only freight elevators.
5. Two-way communication systems are not required at the landing serving a private residence elevator.
6. Two-way communication systems are not required in Group I-2 or I-3 facilities.

1009.8.1 System requirements. Two-way communication systems shall provide communication between each required location and the fire command center or a central control point location approved by the fire department. Where the central control point is not a constantly attended location, the two-way communication system shall have timed, automatic telephone dial-out capability that provides two-way communication with an approved supervising station or emergency services. The two-way communication system shall include both audible and visible signals. Systems shall be listed in accordance with UL 2525 and installed in accordance with NFPA 72.

1009.8.1.1 Visible communication method. [DSA-AC and HCD 1-AC] *A button complying with Section 1138A.4 or Sections 11B-205 and 11B-309 in the area of refuge shall activate both a light in the area of refuge indicating that rescue has been requested and a light at the central control point indicating that rescue is being requested. A button at the central control point shall activate both a light at the central control point and a light in the area of refuge indicating that the request has been received.*

1009.8.2 Directions. Directions for the use of the two-way communication system, instructions for summoning assistance via the two-way communication system and written identification of the location shall be posted adjacent to the two-way communication system. Signage shall comply with *Chapter 11A, Section 1143A or Chapter 11B, Section 11B-703.5* requirements for visual characters.

1009.9 Signage. Signage indicating special accessibility provisions shall be provided as shown:

1. Each door providing access to an area of refuge from an adjacent floor area shall be identified by a sign stating, “AREA OF REFUGE.”
2. Each door providing access to an exterior area for assisted rescue shall be identified by a sign stating, “EXTERIOR AREA FOR ASSISTED RESCUE.”

Signage shall comply with *Chapter 11A, Section 1143A and Chapter 11B, Section 11B-703.5, as applicable,* requirements for visual characters and include the International Symbol of Accessibility. Where exit sign illumination is required by Section 1013.3, the signs shall be illuminated. Additionally, visual characters, raised character and braille signage complying with *Chapter 11A, Section 1143A or Chapter 11B, Sections 11B-703.1, 11B-703.2, 11B-703.3 and 11B-703.5* shall be located at each door to an area of refuge and exterior area for assisted rescue in accordance with Section 1013.4. *The International Symbol of Accessibility shall comply with Chapter 11A, Section 1143A or Chapter 11B, Section 11B-703.7.2.1.*

1009.10 Directional signage. Directional signage *complying with Chapter 11B, Section 11B-703.5* indicating the location of all other means of egress and which of those are accessible means of egress shall be provided at the following:

1. At exits serving a required accessible space but not providing an approved accessible means of egress.
2. At elevator landings.
3. Within areas of refuge.

1009.11 Instructions. In areas of refuge, exterior areas for assisted rescue and locations required to provide two-way communications systems complying with Section 1009.8, instructions on the use of the area under emergency conditions shall be posted.

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Signage shall comply with the *Chapter 11A, Section 1143A or Chapter 11B, Section 11B-703.5* requirements for visual characters. The instructions shall include all of the following:

1. Persons able to use the exit stairway do so as soon as possible, unless they are assisting others.
2. Information on planned availability of assistance in the use of stairs or supervised operation of elevators and how to summon such assistance.
3. Directions for use of the two-way communication system where provided.

1009.12 Alarms/emergency warning systems/two-way communication systems. *Required emergency warning systems shall activate a means of warning the hearing impaired. Emergency warning systems provided as part of the fire-alarm system and two-way communication systems required by Chapter 10 shall be designed and installed in accordance with NFPA 72 as amended in Chapter 35.*

SECTION 1010—DOORS, GATES AND TURNSTILES

[DSA-AC] *In addition to the requirements of this section, means of egress, which provide access to, or egress from, buildings or facilities where accessibility is required for applications listed in Section 1.9.1 regulated by the Division of the State Architect—Access Compliance, shall also comply with Chapter 11A or Chapter 11B, Sections 11B-206.5 and 11B-404, as applicable.*

1010.1 General. Doors in the means of egress shall comply with the requirements of Sections 1010.1.1 through 1010.3.4. Exterior exit doors shall also comply with the requirements of Section 1022.2. Gates in the means of egress shall comply with the requirements of Sections 1010.4 and 1010.4.1. Turnstiles in the means of egress shall comply with the requirements of Sections 1010.5 through 1010.5.4.

Doors, gates and turnstiles provided for egress purposes in numbers greater than required by this code shall comply with the requirements of this section.

Doors in the means of egress shall be readily distinguishable from the adjacent construction and finishes such that the doors are easily recognizable as doors. Mirrors or similar reflecting materials shall not be used on means of egress doors. Means of egress doors shall not be concealed by curtains, drapes, decorations or similar materials.

1010.1.1 Size of doors. The required capacity of each door opening shall be sufficient for the occupant load thereof and shall provide a minimum clear opening width of 32 inches (813 mm). The clear opening width of doorways with swinging doors shall be measured between the face of the door and the frame stop, with the door open 90 degrees (1.57 rad). Where this section requires a minimum clear opening width of 32 inches (813 mm) and a door opening includes two door leaves without a mullion, one leaf shall provide a minimum clear opening width of 32 inches (813 mm). In Group I-2 *or an ambulatory care facility,* doors serving as means of egress doors where used for the movement of beds *and stretcher patients* shall provide a minimum clear opening width of *44 inches (1118 mm). Where this section requires a minimum clear opening width of 44 inches (1118 mm) and a door opening includes two door leaves without a mullion, one leaf shall provide a minimum clear opening width of 44 inches (1118 mm).* The minimum clear opening height of doors shall be not less than 80 inches (2032 mm).

Exceptions:

1. In Group R-2 and R-3 dwelling and sleeping units that are not required to be *adaptable or accessible as specified in Chapter 11A*, the minimum width shall not apply to door openings that are not part of the required means of egress.
2. In Group I-3, door openings to resident sleeping units that are not required to be *adaptable or accessible as specified in Chapter 11A* shall have a minimum clear opening width of 28 inches (711 mm).
3. Door openings to storage closets less than 10 square feet (0.93 m^2) in area shall not be limited by the minimum clear opening width.
4. Door openings within a dwelling unit or sleeping unit shall have a minimum clear opening height of 78 inches (1981 mm).
5. In dwelling and sleeping units that are not required to be *adaptable or accessible as specified in Chapter 11A*, exterior door openings other than the required exit door shall have a minimum clear opening height of 76 inches (1930 mm).
6. In Groups R-2, R-3 and R-4 in dwelling and sleeping units that are not required to be *adaptable or accessible as specified in Chapter 11A,* the minimum clear opening widths shall not apply to interior egress doors.
7. Doors serving sauna compartments, toilet compartments or dressing, fitting or changing compartments that are not required to *comply with Chapter 11A or Chapter 11B* shall have a minimum clear opening width of 20 inches (508 mm).
8. Doors serving shower compartments shall comply with Section *408.6* of the *California Plumbing Code*.

1010.1.1.1 Projections into clear opening. There shall not be projections into the required clear opening width lower than 34 inches (864 mm) above the floor or ground. Projections into the clear opening width between 34 inches (864 mm) and 80 inches (2032 mm) above the floor or ground shall not exceed 4 inches (102 mm).

Exceptions:

1. Door closers, overhead doorstops, frame stops, power door operators, and electromagnetic door locks shall project into the door opening height not lower than 78 inches (1980 mm) above the floor.
2. *In a Group I-2 occupancy, there shall be no projections into the clear width of doors used for the movement of beds and stretcher patients in the means of egress.*

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1010.1.2 Egress door types. Egress doors shall be of the side-hinged swinging door, pivoted door, or balanced door types.

Exceptions:

1. Private garages, office areas, factory and storage areas with an occupant load of 10 or less.
2. Group I-3 occupancies used as a place of detention.
3. Critical or intensive care patient rooms within suites of health care facilities.
4. Doors within or serving a single dwelling unit in Groups R-2 and R-3.
5. In other than Group H occupancies, revolving doors complying with Section 1010.3.1.
6. In other than Group H occupancies, special purpose horizontal sliding, accordion or folding door assemblies complying with Section 1010.3.3.
7. Power-operated doors in accordance with Section 1010.3.2.
8. Doors serving a bathroom within an individual dwelling unit or sleeping unit in Group R-1.
9. In other than Group H occupancies, manually operated horizontal sliding doors are permitted in a means of egress from spaces with an occupant load of 10 or less.
10. *In Group I-2 occupancies, exit doors serving an occupant load of 50 or more, shall not be of the pivoted or balanced type.*

1010.1.2.1 Direction of swing. Side-hinged swinging doors, pivoted doors and balanced doors shall swing in the direction of egress travel where serving a room or area containing an occupant load of 50 or more persons or a Group H occupancy. *For Group L occupancies, see Section 453.6.2.*

In a Group I-2 occupancy, all required exterior egress doors shall open in the direction of egress regardless of the occupant load served.

1010.1.3 Forces to unlatch and open doors. The forces to unlatch doors shall comply with the following:

1. Where door hardware operates by push or pull, the operational force to unlatch the door shall not exceed 15 pounds (67 N).
2. Where door hardware operates by rotation, the operational force to unlatch the door shall not exceed 28 inch-pounds (315 N-cm).

The force to open doors shall comply with the following:

1. For interior swinging egress doors that are manually operated, other than doors required to be fire rated, the force for pushing or pulling open the door shall not exceed 5 pounds (22 N).
2. For other swinging doors, sliding doors or folding doors, and doors required to be fire rated, the door shall require not more than a 30-pound (133 N) force to be set in motion and shall move to a full-open position when subjected to not more than a 15-pound (67 N) force.

1010.1.3.1 Location of applied forces. Forces shall be applied to the latch side of the door.

1010.1.3.2 Manual horizontal sliding doors. Where a manual horizontal sliding door is required to latch, the latch or other mechanism shall prevent the door from rebounding into a partially open position when the door is closed.

1010.1.4 Floor elevation. There shall be a floor or landing on each side of a door. Such floor or landing shall be at the same elevation on each side of the door. Landings shall be level except for exterior landings, which are permitted to have a slope not to exceed 0.25 unit vertical in 12 units horizontal (2-percent slope).

Exceptions:

1. At doors serving individual dwelling units or sleeping units in Groups R-2 and R-3, a door is permitted to open at the top step of an interior flight of stairs, provided that the door does not swing over the top step.
2. At exterior doors serving Groups F, H, R-2 and S and where such doors are not part of an *adaptable or* accessible route *or, not required to be accessible by Chapter 11A or 11B of the California Building Code*, the landing at an exterior door shall not be more than 7 inches (178 mm) below the landing on the egress side of the door, provided that the door, other than an exterior storm or screen door, does not swing over the landing.
3. At exterior doors serving Group U and individual dwelling units and sleeping units in Groups R-2 and R-3, and where such units are not required to be *adaptable or accessible*, the landing at an exterior doorway shall be not more than $7^3/_4$ inches (197 mm) below the landing on the egress side of the door. Such doors, including storm or screen doors, shall be permitted to swing over either landing.
4. Variations in elevation due to differences in finish materials, but not more than $^1/_2$ inch (12.7 mm).
5. Exterior decks, patios or balconies that are part of *adaptable or accessible* dwelling units or sleeping units, that have impervious surfaces and that are not more than 4 inches (102 mm) below the finished floor level of the adjacent interior space of the dwelling unit or sleeping unit. *See also Chapter 11A, Section 1132A.4 or Chapter 11B, as applicable.*
6. Doors serving equipment spaces not required to be *adaptable or* accessible in accordance with Section 1103.2.9 and serving an occupant load of five or less shall be permitted to have a landing on one side to be not more than 7 inches (178 mm) above or below the landing on the egress side of the door.

1010.1.5 Landings at doors. Landings shall have a width not less than the width of the stairway or the door, whichever is greater. Doors in the fully open position shall not reduce a required dimension by more than 7 inches (178 mm). Where a landing serves an

occupant load of 50 or more, doors in any position shall not reduce the landing to less than one-half its required width. Landings shall have a length measured in the direction of travel of not less than 44 inches (1118 mm).

Exception: Landing length in the direction of travel in Groups R-3 and U and within individual units of Group R-2 need not exceed 36 inches (914 mm).

1010.1.6 Thresholds. Thresholds at doorways shall not exceed $^{3}/_{4}$ inch (19.1 mm) in height above the finished floor or landing for sliding doors serving dwelling units or $^{1}/_{2}$ inch (12.7 mm) above the finished floor or landing for other doors. Raised thresholds and floor level changes greater than $^{1}/_{4}$ inch (6.4 mm) at doorways shall be beveled with a slope not greater than one unit vertical in two units horizontal (50-percent slope).

Exceptions:

1. In occupancy Group R-2 or R-3, threshold heights for sliding and side-hinged exterior doors shall be permitted to be up to $7^{3}/_{4}$ inches (197 mm) in height if all of the following apply:
   1.1. The door is not part of the required means of egress.
   1.2. The door is not part of an accessible route as required by Chapter *11A or 11B.*
   1.3. The door is not part of an *adaptable or accessible dwelling unit.*
2. In *adaptable or accessible dwelling* units, where Exception 5 to Section 1010.1.4 permits a 4-inch (102 mm) elevation change at the door, the threshold height on the exterior side of the door shall not exceed $4^{3}/_{4}$ inches (120 mm) in height above the exterior deck, patio or balcony for sliding doors or $4^{1}/_{2}$ inches (114 mm) above the exterior deck, patio or balcony for other doors.

1010.1.7 Door arrangement. Space between two doors in a series shall be 48 inches (1219 mm) minimum plus the width of a door swinging into the space. Doors in a series shall swing either in the same direction or away from the space between the doors.

Exceptions:

1. The minimum distance between horizontal sliding power-operated doors in a series shall be 48 inches (1219 mm).
2. Storm and screen doors serving individual dwelling units in Groups R-2 and R-3 need not be spaced 48 inches (1219 mm) from the other door.
3. Doors within individual dwelling units in Groups R-2 and R-3 other than *adaptable or accessible* dwelling units.

1010.2 Door operations. Except as specifically permitted by this section, egress doors shall be readily openable from the egress side without the use of a key or special knowledge or effort.

1010.2.1 Unlatching. The unlatching of any door or leaf for egress shall require not more than one motion in a single linear or rotational direction to release all latching and all locking devices. Manual bolts are not permitted.

Exceptions:

1. Places of detention or restraint.
2. Doors with manual bolts, automatic flush bolts and constant latching bolts as permitted by Section 1010.2.4, Item 4.
3. Doors from individual dwelling units and sleeping units of Group R occupancies as permitted by Section 1010.2.4, Item 5.

1010.2.2 Hardware. Door handles, pulls, latches, locks and other operating devices on doors required to be accessible by Chapter *11A or 11B* shall not require tight grasping, tight pinching or twisting of the wrist to operate.

These design requirements for door handles, pulls, latches, locks and other operating devices, intended for use on required means of egress doors in other than Group R and M occupancies with an occupant load of 10 or less, shall comply with SFM Standard 12-10-2, Section 12-10-202 contained in the CCR, Title 24, Part 12, California Referenced Standards Code.

1010.2.3 Hardware height. Door handles, pulls, latches, locks and other operating devices shall be installed 34 inches (864 mm) minimum and 48 inches (1219 mm) maximum above the finished floor.

Exceptions:

1. Locks used only for security purposes and not used for normal operation are permitted at any height.
2. Where the *California Building Code* requires restricting access to a pool, spa or hot tub, and where door and gate latch release mechanisms are accessed from the outside of the barrier and are not of the self-locking type, such a mechanism shall be located above the finished floor or ground surface not less than 52 inches (1219 mm) and not greater than 54 inches (1370 mm), provided that the latch release mechanism is not a self-locking type such as where the lock is operated by means of a key, electronic opener or the entry of a combination into an integral combination lock.

1010.2.4 Locks and latches. Locks and latches shall be permitted to prevent operation of doors where any of the following exist:

1. Places of detention or restraint.
2. In Group I-2 *and R-2.1* occupancies where the clinical needs of persons receiving care require containment or where persons receiving care pose a security threat, provided that all clinical staff can readily unlock doors at all times, and all such locks are keyed to keys carried by all clinical staff at all times or all clinical staff have the codes or other means necessary to operate the locks at all times.

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3. In buildings in occupancy Group A having an occupant load of 300 or less, Groups B, F, M and S, and in places of religious worship, the main door or doors are permitted to be equipped with key-operated locking devices from the egress side provided that:
   3.1. The doors are the main exterior doors to the building, or the doors are the main doors to the tenant space.
   3.2. The locking device is readily distinguishable as locked.
   3.3. A readily visible durable sign is posted on the egress side on or adjacent to the door stating: THIS DOOR TO REMAIN UNLOCKED WHEN THIS SPACE IS OCCUPIED. The sign shall be in letters 1 inch (25 mm) high on a contrasting background.
   3.4. The use of the key-operated locking device is revocable by the building official for due cause.
4. Manual bolts, automatic flush bolts and constant latching bolts on the inactive leaf of a pair of doors in accordance with Table 1010.2.4, provided that the inactive leaf does not have a doorknob, panic hardware, or similar operating hardware.
5. Single exit doors complying with Section 1006.2.1 or 1006.3.4 from individual dwelling or sleeping units of Group R occupancies and equipped with a night latch, dead bolt, manual bolt, or security chain that requires a second releasing motion, provided that such devices are openable from the inside without the use of a key or tool.
6. Fire doors after the minimum elevated temperature has disabled the unlatching mechanism in accordance with listed fire door test procedures.
7. Doors serving roofs not intended to be occupied shall be permitted to be locked preventing entry to the building from the roof.
8. Other than egress courts, where occupants must egress from an exterior space through the building for means of egress, exit access doors shall be permitted to be equipped with an approved locking device where installed and operated in accordance with all of the following:
   8.1. The maximum occupant load shall be posted where required by Section 1004.9. Such signage shall be permanently affixed inside the building and shall be posted in a conspicuous space near all the exit access doorways.
   8.2. A weatherproof telephone or two-way communication system installed in accordance with Sections 1009.8.1 and 1009.8.2 shall be located adjacent to not less than one required exit access door on the exterior side.
   8.3. The egress door locking device is readily distinguishable as locked and shall be a key-operated locking device.
   8.4. A clear window or glazed door opening, not less than 5 square feet (0.46 m^2) in area, shall be provided at each exit access door to determine if there are occupants using the outdoor area.
   8.5. A readily visible, durable sign shall be posted on the interior side on or adjacent to each locked required exit access door serving the exterior area stating, “THIS DOOR TO REMAIN UNLOCKED WHEN THE OUTDOOR AREA IS OCCUPIED.” The letters on the sign shall be not less than 1 inch (25.4 mm) high on a contrasting background.
   8.6. The occupant load of the occupied exterior area shall not exceed 300 occupants in accordance with Section 1004.
9. Locking devices are permitted on doors to balconies, decks or other exterior spaces serving individual dwelling or sleeping units.
10. Locking devices are permitted on doors to balconies, decks or other exterior spaces of 250 square feet (23.23 m^2) or less serving a private office space.

TABLE 1010.2.4—MANUAL BOLTS, AUTOMATIC FLUSH BOLTS AND CONSTANT LATCHING BOLTS ON THE INACTIVE LEAF OF A PAIR OF DOORS

APPLICATION WITH A PAIR OF DOORS WITH AN ACTIVE LEAF AND AN INACTIVE LEAF	THE PAIR OF DOORS IS REQUIRED TO COMPLY WITH SECTION 716	PERMITTED USES OF MANUAL BOLTS, AUTOMATIC FLUSH BOLTS AND CONSTANT LATCHING BOLTS ON THE INACTIVE LEAF OF A PAIR OF DOORS		
		Surface- or flush-mounted manual bolts	Automatic flush bolts	Constant latching bolts
Group B, F or S occupancies with occupant load less than 50.	No	P	P	P
	Yes	NP	NP[b]	P
Group B, F or S occupancies where the building is equipped with an automatic sprinkler system in accordance with Section 903.3.1.1 and the inactive leaf is not needed to meet egress capacity requirements.	No	P	P	P
	Yes	NP	NP[b]	P
Group I-2 patient care and sleeping rooms where inactive leaf is not needed to meet egress capacity requirements.	No	NP	NP[b]	P
	Yes	NP	NP[b]	P
Any occupancy where panic hardware is not required, egress doors are used in pairs, and where both leaves are required to meet egress capacity requirements.	No	NP	P	NP
	Yes	NP	NP[b]	NP
Storage or equipment rooms where the inactive leaf is not needed to meet egress capacity requirements.	No	P[a]	P	P
	Yes	P[a]	P	P

P = Permitted. NP = Not permitted.
a. Not permitted on corridor doors in Group I-2 occupancies where corridor doors are required to be positive latching.
b. Permitted where both doors are self closing or automatic closing, and are provided with a coordinator that causes the inactive leaf to be closed prior to the active leaf.

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1010.2.5 Closet doors. Closet doors that latch in the closed position shall be openable from inside the closet.

1010.2.6 Stairway doors. Interior stairway means of egress doors shall be openable from both sides without the use of a key or special knowledge or effort.

Exceptions:

1. Stairway discharge doors shall be openable from the egress side and shall only be locked from the opposite side.
2. This section shall not apply to doors arranged in accordance with Section 403.5.3.
3. Stairway exit doors shall not be locked from the side opposite the egress side, unless they are openable from the egress side and capable of being unlocked simultaneously without unlatching by any of the following methods:
   3.1. Shall be capable of being unlocked individually or simultaneously upon a signal from the fire command center, where present, or a signal by emergency personnel from a single location inside the main entrance to the building.
   3.2. Shall unlock simultaneously upon activation of a fire alarm signal when a fire alarm system is present in an area served by the stairway.
   3.3. Shall unlock upon failure of the power supply to the electric lock or the locking system.
4. Stairway exit doors shall be openable from the egress side and shall only be locked from the opposite side in Group B, F, M and S occupancies where the only interior access to the tenant space is from a single exit stairway where permitted in Section 1006.3.4.
5. Stairway exit doors shall be openable from the egress side and shall only be locked from the opposite side in Group R-2 occupancies where the only interior access to the dwelling unit is from a single exit stairway where permitted in Section 1006.3.4.

1010.2.7 Locking arrangements in educational occupancies. In Group E occupancies, Group B educational occupancies and Group I-4 occupancies, egress doors from classrooms, offices and other occupied rooms with locking arrangements designed to keep intruders from entering the room shall comply with all of the following conditions:

1. The door shall be capable of being unlocked from outside the room with a key or other approved means.
2. The door shall be openable from within the room in accordance with Section 1010.2.
3. Modifications shall not be made to listed panic hardware, fire door hardware or door closers.
4. Modifications to fire door assemblies shall be in accordance with NFPA 80.

Remote locking or unlocking of doors from an approved location shall be permitted in addition to the unlocking operation in Item 1.

1010.2.7.1 Special provisions—school classrooms. *School classrooms constructed after January 1, 1990, not equipped with automatic sprinkler systems, which have metal grilles or bars on all their windows and do not have at least two exit doors within 3 feet (914 mm) of each end of the classroom opening to the exterior of the building or to a common hallway used for evacuation purposes, shall have an inside release for the grilles or bars on at least one window farthest from the exit doors. The window or windows with the inside release shall be clearly marked as emergency exits.*

1010.2.7.2 Group E lockable doors from the inside. *New buildings that are included in public schools (kindergarten through 12th grade) state funded projects and receiving state funding pursuant to Leroy F. Green, School Facilities Act of 1998, California Education Code Sections 17070.10 through 17079, and that are submitted to the Division of the State Architect for plan review after July 1, 2011 in accordance with Education Code 17075.50, shall include locks that allow doors to classrooms and any room with an occupancy of five or more persons to be locked from the inside. The locks shall conform to the specification and requirements found in Section 1010.2.*

Exceptions:

1. *Doors that are locked from the outside at all times such as, but not limited to, janitor's closet, electrical room, storage room, boiler room, elevator equipment room and pupil restroom.*
2. *Reconstruction projects that utilize original plans in accordance with California Administrative Code, Section 4-314.*
3. *Existing relocatable buildings that are relocated within same site in accordance with California Administrative Code, Section 4-314.*

1010.2.8 Panic and fire exit hardware. Swinging doors serving a Group H occupancy and swinging doors serving rooms or spaces with an occupant load of 50 or more in a Group A or E occupancy, *assembly area not classified as an assembly occupancy, E or I-2 occupancies* shall not be provided with a latch or lock other than panic hardware or fire exit hardware. *For Group L occupancies see Section 453.6.3.*

Exceptions:

1. A main exit of a Group A occupancy shall be permitted to have locking devices in accordance with Section 1010.2.4, Item 3.
2. Doors provided with panic hardware or fire exit hardware and serving a Group A or E occupancy shall be permitted to be electrically locked in accordance with Section 1010.2.10.
3. Exit access doors serving occupied exterior areas shall be permitted to be locked in accordance with Section 1010.2.4, Item 8.
4. Courtrooms shall be permitted to be locked in accordance with Section 1010.2.12, Item 3.

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1010.2.8.1 Refrigeration machinery room. Refrigeration machinery rooms larger than 1,000 square feet (93 m^2) shall have not less than two exit or exit access doorways that swing in the direction of egress travel and shall be equipped with panic hardware or fire exit hardware.

1010.2.8.2 Rooms with electrical equipment. Exit or exit access doors serving transformer vaults, rooms designated for batteries or energy storage systems, or modular data centers shall be equipped with panic hardware or fire exit hardware. Rooms containing electrical equipment rated 800 amperes or more that contain overcurrent devices, switching devices or control devices and where the exit or exit access door is less than 25 feet (7620 mm) from the equipment working space as required by *the California Electrical Code*, such doors shall not be provided with a latch or lock other than panic hardware or fire exit hardware. The doors shall swing in the direction of egress travel.

1010.2.8.3 Installation. Where panic or fire exit hardware is installed, it shall comply with the following:

1. Panic hardware shall be listed in accordance with UL 305.
2. Fire exit hardware shall be listed in accordance with UL 10C and UL 305.
3. The actuating portion of the releasing device shall extend not less than one-half of the door leaf width.
4. The maximum unlatching force shall not exceed 15 pounds (67 N).

1010.2.8.4 Balanced doors. If balanced doors are used and panic hardware is required, the panic hardware shall be the push-pad type and the pad shall not extend more than one-half the width of the door measured from the latch side.

1010.2.9 Monitored or recorded egress, and access control systems. Where electrical systems that monitor or record egress activity are incorporated, or where the door has an access control system, the locking system on the egress side of the door shall comply with Section 1010.2.10, 1010.2.11, 1010.2.12, 1010.2.13, 1010.2.14 or 1010.2.15 or shall be readily openable from the egress side without the use of a key or special knowledge or effort.

1010.2.10 Door hardware release of electrically locked egress doors. Door hardware release of electrical locking systems shall be permitted on doors in the means of egress in any occupancy except Group H where installed and operated in accordance with all of the following:

1. The door hardware that is affixed to the door leaf has an obvious method of operation that is readily operated under all lighting conditions.
2. The door hardware is capable of being operated with one hand and shall comply with Section 1010.2.1.
3. Operation of the door hardware directly interrupts the power to the electric lock and unlocks the door immediately.
4. Loss of power to the electrical locking system automatically unlocks the electric lock.
5. Where panic or fire exit hardware is required by Section 1010.2.8, operation of the panic or fire exit hardware also releases the electric lock.
6. The electromechanical or electromagnetic locking device shall be listed in accordance with either UL 294 or UL1034.

1010.2.11 Sensor release of electrically locked egress doors. Sensor release of electrical locking systems shall be permitted on doors located in the means of egress in any occupancy except Group H where installed and operated in accordance with all of the following criteria:

1. The sensor shall be installed on the egress side, arranged to detect an occupant approaching the doors, and shall cause the electrical locking system to unlock the electric lock.
2. Upon a signal from a sensor or loss of power to the sensor, the electrical locking system shall unlock the electric lock.
3. Loss of power to the electric lock or the electrical locking system shall automatically unlock the electric locks.
4. The doors shall be arranged to unlock the electric lock from a manual unlocking device located 40 inches to 48 inches (1016 mm to 1219 mm) vertically above the floor and within 5 feet (1524 mm) of the secured doors. Ready access shall be provided to the manual unlocking device and the device shall be clearly identified by a sign that reads "PUSH TO EXIT." When operated, the manual unlocking device shall result in direct interruption of power to the electric lock—independent of other electronics—and the electric lock shall remain unlocked for not less than 30 seconds.
5. Activation of the building fire alarm system, where provided, shall automatically unlock the electric lock, and the electric lock shall remain unlocked until the fire alarm system has been reset.
6. Activation of the building automatic sprinkler system or fire detection system, where provided, shall automatically unlock the electric lock. The electric lock shall remain unlocked until the fire alarm system has been reset.
7. Emergency lighting shall be provided on the egress side of the door.
8. The electromechanical or electromagnetic locking device shall be listed in accordance with either UL 294 or UL 1034.

1010.2.11.1 Access-controlled elevator lobby doors in high-rise office buildings. *For elevator lobbies in high-rise office buildings where the occupants of the floor are not required to travel through the elevator lobby to reach an exit, when approved by the fire chief, the doors separating the elevator lobby from the adjacent occupied tenant space that also serve as the entrance doors to the tenant space shall be permitted to be equipped with an approved entrance and egress access control system provided all of the following requirements are met:*

1. *The building is provided throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.*
2. *A smoke detector is installed on the ceiling on the tenant side of the elevator lobby doors along the center line of the door opening, not less than 1 foot and not more than 5 feet from the door opening, and is connected to the fire alarm system.*

3. *A remote master switch capable of unlocking the elevator lobby doors shall be provided in the fire command center for use by the fire department.*
4. *Locks for the elevator lobby shall be U.L. and California State Fire Marshal listed fail-safe type locking mechanisms. The locking device shall automatically release on activation of any fire alarm device on the floor of alarm (waterflow, smoke detector, manual pull stations, etc.). All locking devices shall unlock, but not unlatch, upon activation.*
5. *A two-way voice communication system, utilizing dedicated lines, shall be provided from each locked elevator lobby to the 24-hour staffed location on site, annunciated as to location. Operating instructions shall be posted above each two-way communication device.*

   Exception: *When approved by the fire chief, two-way voice communication system to an off-site facility may be permitted where means to remotely unlock the access controlled doors from the off-site facility are provided.*
6. *An approved momentary mushroom-shaped palm button connected to the doors and installed adjacent to each locked elevator lobby door shall be provided to release the door locks when operated by an individual in the elevator lobby. The locks shall be reset manually at the door. Mount palm button so that the center line is 48 inches above the finished floor.*

   Provide a sign stating:

   "IN CASE OF EMERGENCY, PUSH PALM BUTTON,
   DOOR WILL UNLOCK
   AND SECURITY ALARM
   WILL SOUND."

   The sign lettering shall be $^{3}/_{4}$-inch high letters by $^{1}/_{8}$-inch width stroke on a contrasting background.
7. *Loss of power to that part of the access control system which locks the doors shall automatically unlock the doors.*

1010.2.12 Delayed egress. Delayed egress electrical locking systems shall be permitted on doors in the means of egress serving the following occupancies in buildings that are equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 *and* an approved automatic smoke or heat detection system installed in accordance with Section 907.

1. Group B, F, I, M, R, S and U occupancies.
2. Group E classrooms with an occupant load of less than 50.
3. In courtrooms in Group A-3 and B occupancies, delayed egress electrical locking systems shall be permitted to be installed on exit or exit access doors, other than the main exit or exit access door, in buildings that are equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 *and an approved automatic smoke detection system installed in accordance with Section 907.*

1010.2.12.1 Delayed egress locking system. The delayed egress electrical locking system shall be installed and operated in accordance with all of the following:

1. The delay of the delayed egress electrical locking system shall deactivate upon actuation of the *automatic sprinkler system required by Section 1010.2.13 and the delay electronics of the delayed egress locking system shall deactivate upon actuation of the smoke or heat detection system required by Section 1010.2.13,* allowing immediate free egress.
2. The delay of the delayed egress electrical locking system shall deactivate upon loss of *electrical* power to the electrical locking system or electrical lock, allowing immediate free egress, *to any one of the following:*
   2.1. The egress-control device itself.
   2.2. The smoke detection system.
   2.3. Means of egress illumination as required by Section 1008.
3. The delay of the delayed egress locking electrical system shall have the capability of being deactivated at the fire command center and other approved locations.
4. An attempt to egress shall initiate an irreversible process that shall allow such egress in not more than 15 seconds when a physical effort to exit is applied to the egress side door hardware for not more than 3 seconds. Initiation of the irreversible process shall activate an audible signal in the vicinity of the door. Once the delay has been deactivated, rearming the delay electronics shall be by manual means only. *The time delay established for each egress-control device shall not be field adjustable. For applications listed in Section 1.9.1 regulated by the Division of the State Architect—Access Compliance, see Chapter 11B, 11B-404.2.9.*

   Exception: *In facilities housing Alzheimer's or dementia clients,* a delay of not more than 30 seconds is permitted on a delayed egress door.
5. The egress path from any point shall not pass through more than one delayed egress locking system.

   Exceptions:

   1. In Group *R-2.1*, Group I-2 or I-3 occupancies, the egress path from any point in the building shall pass through not more than two delayed egress locking systems provided that the combined delay does not exceed 30 seconds.
      5.1. A tactile sign shall also be provided in Braille and raised characters, which complies with Chapter 11B, Sections 11B-703.1, 11B-703.2, 11B-703.3 and 11B-703.5.
   2. In Group *R-2.1* or Group I-4 occupancies, the egress path from any point in the building shall pass through not more than two delayed egress locking systems provided the combined delay does not exceed 30

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seconds and the building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.

6. A sign shall be provided on the door and shall be located above and within 12 inches (305 mm) of the door exit hardware.

   Exception: Where approved, in Group I occupancies, the installation of a sign is not required where care recipients who because of clinical needs require restraint or containment as part of the function of the treatment area.

   6.1. For doors that swing in the direction of egress, the sign shall read, "PUSH UNTIL ALARM SOUNDS. DOOR CAN BE OPENED IN 15 [30] SECONDS."

   6.2. For doors that swing in the opposite direction of egress, the sign shall read, "PULL UNTIL ALARM SOUNDS. DOOR CAN BE OPENED IN 15 [30] SECONDS."

   6.3. The sign shall comply with the visual character requirements in *Section 11B-703.5. Sign lettering shall be at least 1 inch (25 mm) in height and shall have a stroke of not less than $^{1}/_{8}$ inch (3.2 mm).*

   6.4. A tactile sign shall also be provided in Braille and raised characters, which complies with Chapter 11B, Sections 11B-703.1, 11B-703.2, 11B-703.3 and 11B-703.5.

7. Emergency lighting shall be provided on the egress side of the door.
8. The electromechanical or electromagnetic locking device shall be listed in accordance with either UL 294 or UL 1034.
9. Actuation of the panic bar or other door-latching hardware shall activate an audible signal at the door.
10. The unlatching shall not require more than one operation.
11. Regardless of the means of deactivation, relocking of the egress-control device shall be by manual means only at the door.

1010.2.13 Controlled egress doors in Group I-2. Controlled egress electrical locking systems where egress is controlled by authorized personnel shall be permitted on doors in the means of egress in Group I-2 occupancies where the clinical needs of persons receiving *psychiatric or mental health treatment* require their *restraint or* containment. Controlled egress doors shall be permitted in such occupancies where the building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 *and* an approved automatic smoke detection system installed in accordance with Section 907, provided that the doors are installed and operate in accordance with all of the following:

1. The door's electric locks shall unlock on actuation of the automatic sprinkler system or automatic smoke detection system allowing immediate free egress.
2. The door's electric locks shall unlock on loss of power to the electrical locking system or to the electric lock mechanism allowing immediate free egress.
3. The electrical locking system shall be installed to have the capability of unlocking the electric locks by a switch located at the fire command center, a nursing station or other approved location. The switch shall directly break power to the electric lock.
4. A building occupant shall not be required to pass through more than one door equipped with a controlled egress locking system before entering an exit.
5. All staff shall have the keys, codes or other means necessary to operate the controlled egress electrical locking systems.
6. Emergency lighting shall be provided at the door.
7. The electromechanical or electromagnetic locking device shall be listed in accordance with either UL 294 or UL 1034.

Exception: Items 1 through 4 shall not apply to doors to areas occupied by persons who, because of clinical needs, require restraint or containment as part of the function of a psychiatric or *mental health* treatment area.

1010.2.14 Elevator lobby exit access doors. Electrically locked exit access doors providing egress from elevator lobbies shall meet the following conditions:

1. For all occupants of the floor, the path of exit access travel to not less than two exits is not required to pass through the elevator lobby.
2. The building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1, and a fire alarm system in accordance with Section 907. Elevator lobbies shall be provided with an automatic smoke detection system in accordance with Section 907.
3. Upon activation of the building fire alarm system by means other than a manual fire alarm box shall automatically unlock the electric locks providing exit access from the elevator lobbies, and the electric locks shall remain unlocked until the fire alarm system is reset.
4. The electric locks shall unlock on loss of power to the electric locks or electrical locking system.
5. The electric locks shall have the capability of being unlocked by a switch located at the fire command center, security station or other approved location.
6. A two-way communication system complying with Sections 1009.8.1 and 1009.8.2, shall be located in the elevator lobby adjacent to the electrically locked exit access door and connected to an approved constantly attended station. This constantly attended station shall have the capability of unlocking the electric locks of the elevator lobby exit access doors.
7. Emergency lighting shall be provided in the elevator lobby on both sides of the electrically locked door.
8. The electromechanical or electromagnetic locking device shall be listed in accordance with either UL 294 or UL 1034.

1010.2.15 ***Reserved.***

1010.3 Special doors. Special doors and security grilles shall comply with the requirements of Sections 1010.3.1 through 1010.3.4.

1010.3.1 Revolving doors. Revolving doors shall comply with the following:

1. Revolving doors shall comply with BHMA A156.27 and shall be installed in accordance with the manufacturer's instructions.
2. Each revolving door shall be capable of breakout in accordance with BHMA A156.27 and shall provide an aggregate width of not less than 36 inches (914 mm).
3. A revolving door shall not be located within 10 feet (3048 mm) of the foot or top of stairways or escalators. A dispersal area shall be provided between the stairways or escalators and the revolving doors.
4. The revolutions per minute (rpm) for a revolving door shall not exceed the maximum rpm as specified in BHMA A156.27. Manual revolving doors shall comply with Table 1010.3.1(1). Automatic or power-operated revolving doors shall comply with Table 1010.3.1(2).
5. An emergency stop switch shall be provided near each entry point of power or automatic operated revolving doors within 48 inches (1219 mm) of the door and between 34 inches (864 mm) and 48 inches (1219 mm) above the floor. The activation area of the emergency stop switch button shall be not less than 1 inch (25 mm) in diameter and shall be red.
6. Each revolving door shall have a side-hinged swinging door that complies with Section 1010.1 in the same wall and within 10 feet (3048 mm) of the revolving door.
7. Revolving doors shall not be part of an accessible route required by Section 1009 and Chapter *11A or 11B*.

TABLE 1010.3.1(1)—MAXIMUM DOOR SPEED MANUAL REVOLVING DOORS

REVOLVING DOOR MAXIMUM NOMINAL DIAMETER (FT-IN)	MAXIMUM ALLOWABLE REVOLVING DOOR SPEED (RPM)
6-0	12
7-0	11
8-0	10
9-0	9
10-0	8

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

TABLE 1010.3.1(2)—MAXIMUM DOOR SPEED AUTOMATIC OR POWER-OPERATED REVOLVING DOORS

REVOLVING DOOR MAXIMUM NOMINAL DIAMETER (FT-IN)	MAXIMUM ALLOWABLE REVOLVING DOOR SPEED (RPM)
8-0	7.2
9-0	6.4
10-0	5.7
11-0	5.2
12-0	4.8
12-6	4.6
14-0	4.1
16-0	3.6
17-0	3.4
18-0	3.2
20-0	2.9
24-0	2.4

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

1010.3.1.1 Egress component. A revolving door used as a component of a means of egress shall comply with Section 1010.3.1 and the following three conditions:

1. Revolving doors shall not be given credit for more than 50 percent of the minimum width or required capacity.
2. Each revolving door shall be credited with a capacity based on not more than a 50-person occupant load.
3. Each revolving door shall provide for egress in accordance with BHMA A156.27 with a breakout force of not more than 130 pounds (578 N).

1010.3.1.2 Other than egress component. A revolving door used as other than a component of a means of egress shall comply with Section 1010.3.1. The breakout force of a revolving door not used as a component of a means of egress shall not be more than 180 pounds (801 N).

Exception: A breakout force in excess of 180 pounds (801 N) is permitted if the breakout force is reduced to not more than 130 pounds (578 N) when not less than one of the following conditions is satisfied:

1. There is a power failure or power is removed to the device holding the door wings in position.

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2. There is an actuation of the automatic sprinkler system where such system is provided.
3. There is an actuation of a smoke detection system that is installed in accordance with Section 907 to provide coverage in areas within the building that are within 75 feet (22 860 mm) of the revolving doors.
4. There is an actuation of a manual control switch, in an approved location and clearly identified, that reduces the breakout force to not more than 130 pounds (578 N).

1010.3.2 Power-operated doors. Where means of egress doors are operated or assisted by power, the design shall be such that in the event of power failure, the door is capable of being opened manually to permit means of egress travel or closed where necessary to safeguard means of egress. The forces required to open these doors manually shall not exceed those specified in Section 1010.1.3, except that the force to set the door in motion shall not exceed 50 pounds (220 N). The door shall be capable of opening from any position to the full width of the opening in which such door is installed when a force is applied to the door on the side from which egress is made. Power-operated swinging doors, power-operated sliding doors and power-operated folding doors shall comply with BHMA A156.10. Power-assisted swinging doors and low-energy power-operated swinging doors shall comply with BHMA A156.19. Low-energy power-operated sliding doors and low-energy power-operated folding doors shall comply with BHMA A156.38.

Exceptions:

1. Occupancies in Group I-3.
2. Special purpose horizontal sliding, accordion or folding doors complying with Section 1010.3.3.
3. For a biparting door in the emergency breakout mode, a door leaf located within a multiple-leaf opening shall be exempt from the minimum 32-inch (813 mm) single-leaf requirement of Section 1010.1.1, provided that a minimum 32-inch (813 mm) clear opening is provided when the two biparting leaves meeting in the center are broken out.

1010.3.3 Special purpose horizontal sliding, accordion or folding doors. In other than Group H occupancies, special purpose horizontal sliding, accordion or folding door assemblies permitted to be a component of a means of egress in accordance with Exception 6 to Section 1010.1.2 shall comply with all of the following criteria:

1. The doors shall be power operated and shall be capable of being operated manually in the event of power failure.
2. The doors shall be openable by a simple method without special knowledge or effort from the egress side or sides.
3. The force required to operate the door shall not exceed 30 pounds (133 N) to set the door in motion and 15 pounds (67 N) to close the door or open it to the minimum required width.
4. The door shall be openable with a force not to exceed 15 pounds (67 N) when a force of 250 pounds (1100 N) is applied perpendicular to the door adjacent to the operating device.
5. The door assembly shall comply with the applicable fire protection rating and, where rated, shall be self-closing or automatic closing by smoke detection in accordance with Section 716.2.6.6, shall be installed in accordance with NFPA 80 and shall comply with Section 716.
6. The door assembly shall have an integrated standby power supply.
7. The door assembly power supply shall be electrically supervised.
8. The door shall open to the minimum required width within 10 seconds after activation of the operating device.

1010.3.4 Security grilles. In Groups B, F, M and S, horizontal sliding or vertical security grilles are permitted at the main exit and shall be openable from the inside without the use of a key or special knowledge or effort during periods that the space is occupied. The grilles shall remain secured in the full-open position during the period of occupancy by the general public. Where two or more exits or access to exits are required, not more than one-half of the exits or exit access doorways shall be equipped with horizontal sliding or vertical security grilles.

1010.4 Gates. Gates serving the means of egress system shall comply with the requirements of this section. Gates used as a component in a means of egress shall conform to the applicable requirements for doors.

➡ **1010.4.1 Stadiums.** Panic hardware is not required on gates surrounding stadiums where such gates are under constant immediate supervision while the public is present, and where safe dispersal areas based on 3 square feet (0.28 m^2) per occupant are located between the fence and enclosed space. Such required safe dispersal areas shall not be located less than 50 feet (15 240 mm) from the enclosed space. See Section 1028.5 for means of egress from safe dispersal areas.

1010.5 Turnstiles and similar devices. Turnstiles or similar devices that restrict travel to one direction shall not be placed so as to obstruct any required means of egress, except where permitted in accordance with Sections 1010.5.1, 1010.5.2 and 1010.5.3.

1010.5.1 Capacity. Each turnstile or similar device shall be credited with a capacity based on not more than a 50-person occupant load where all of the following provisions are met:

1. Each device shall turn free in the direction of egress travel when primary power is lost and on the manual release by an employee in the area.
2. Such devices are not given credit for more than 50 percent of the required egress capacity or width.
3. Each device is not more than 39 inches (991 mm) high.
4. Each device has not less than $16^1/_2$ inches (419 mm) clear width at and below a height of 39 inches (991 mm) and not less than 22 inches (559 mm) clear width at heights above 39 inches (991 mm).

1010.5.1.1 Clear width. Where located as part of an accessible route, turnstiles shall have not less than 36 inches (914 mm) clear width at and below a height of 34 inches (864 mm), not less than 32 inches (813 mm) clear width between 34 inches (864 mm) and 80 inches (2032 mm) and shall consist of a mechanism other than a revolving device.

1010.5.2 Security access turnstiles. Security access turnstiles that inhibit travel in the direction of egress utilizing a physical barrier shall be permitted to be considered as a component of the means of egress, provided that all of the following criteria are met:

1. The building is protected throughout by an approved, supervised automatic sprinkler system in accordance with Section 903.3.1.1.
2. Each security access turnstile lane configuration has a minimum clear passage width of 22 inches (559 mm).
3. Any security access turnstile lane configuration providing a clear passage width of less than 32 inches (810 mm) shall be credited with a maximum egress capacity of 50 persons.
4. Any security access turnstile lane configuration providing a clear passage width of 32 inches (810 mm) or more shall be credited with a maximum egress capacity as calculated in accordance with Section 1005.
5. Each secured physical barrier shall automatically retract or swing to an unobstructed open position in the direction of egress, under each of the following conditions:
    5.1. Upon loss of power to the turnstile or any part of the access control system that secures the physical barrier.
    5.2. Upon actuation of a clearly identified manual release device with ready access that results in direct interruption of power to each secured physical barrier, after which such barriers remain in the open position for not less than 30 seconds. The manual release device shall be positioned at one of the following locations:
        5.2.1. On the egress side of each security access turnstile lane.
        5.2.2. At an approved location where it can be actuated by an employee assigned to the area at all times that the building is occupied.
    5.3. Upon actuation of the building fire alarm system, if provided, after which the physical barrier remains in the open position until the fire alarm system is manually reset.

    Exception: Actuation of a manual fire alarm box.
    5.4. Upon actuation of the building automatic sprinkler system or fire detection system, after which the physical barrier remains in the open position until the fire alarm system is manually reset.

1010.5.3 High turnstile. Turnstiles more than 39 inches (991 mm) high shall meet the requirements for revolving doors or the requirements of Section 1010.5.2 for security access turnstiles.

1010.5.4 Additional door. Where serving an occupant load greater than 300, each turnstile that is not portable shall have a side-hinged swinging door that conforms to Section 1010.1 within 50 feet (15 240 mm).

Exception: A side-hinged swinging door is not required at security access turnstiles that comply with Section 1010.5.2.

SECTION 1011—STAIRWAYS

[DSA-AC] *In addition to the requirements of this section, means of egress, which provide access to, or egress from, buildings or facilities where accessibility is required for applications listed in Section 1.9.1 regulated by the Division of the State Architect—Access Compliance, shall also comply with Chapter 11A or Chapter 11B, Sections 11B-210 and 11B-504, as applicable.*

1011.1 General. Stairways serving occupied portions of a building shall comply with the requirements of Sections 1011.2 through 1011.13. Alternating tread devices shall comply with Section 1011.14. Ship's ladders shall comply with Section 1011.15. Ladders shall comply with Section 1011.16.

Exception: Within rooms or spaces used for assembly purposes, stepped aisles shall comply with Section 1030.

1011.2 Width and capacity. The required capacity of stairways shall be determined as specified in Section 1005.1, but the minimum width shall be not less than 44 inches (1118 mm). The minimum width for stairways that serve as part of the accessible means of egress shall comply with Section 1009.3.

Exceptions:

1. Stairways serving an occupant load of less than 50 shall have a width of not less than 36 inches (914 mm).
2. Spiral stairways as provided for in Section 1011.10.
3. Where an incline platform lift or stairway chairlift is installed on stairways serving occupancies in Group R-3, or within dwelling units in occupancies in Group R-2, a clear passage width not less than 20 inches (508 mm) shall be provided. Where the seat and platform can be folded when not in use, the distance shall be measured from the folded position.

Means of egress stairs in a Group I-2 or ambulatory care facility occupancy used for the movement of beds and stretcher patients shall provide a clear width not less than 44 inches (1118 mm).

1011.3 Headroom. Stairways shall have a headroom clearance of not less than 80 inches (2032 mm) measured vertically from a line connecting the nosings. Such headroom shall be continuous above the stairway to the point where the line intersects the landing below, one tread depth beyond the bottom riser. The minimum clearance shall be maintained the full width of the stairway and landing.

Exceptions:

1. Spiral stairways complying with Section 1011.10 are permitted a 78-inch (1981 mm) headroom clearance.

2. In Group R-3 occupancies; within dwelling units in Group R-2 occupancies; and in Group U occupancies that are accessory to a Group R-3 occupancy or accessory to individual dwelling units in Group R-2 occupancies; where the nosings of treads at the side of a flight extend under the edge of a floor opening through which the stair passes, the floor opening shall be allowed to project horizontally into the required headroom not more than $4^3/_4$ inches (121 mm).

1011.4 Walkline. The walkline across winder treads shall be concentric to the direction of travel through the turn and located 12 inches (305 mm) from the side where the winders are narrower. The 12-inch (305 mm) dimension shall be measured from the widest point of the clear stair width at the walking surface of the winder. Where winders are adjacent within the flight, the point of the widest clear stair width of the adjacent winders shall be used.

1011.5 Stair treads and risers. Stair treads and risers shall comply with Sections 1011.5.1 through 1011.5.5.3.

1011.5.1 Dimension reference surfaces. For the purpose of this section, all dimensions are exclusive of carpets, rugs or runners.

1011.5.2 Riser height and tread depth. Stair riser heights shall be 7 inches (178 mm) maximum and 4 inches (102 mm) minimum. The riser height shall be measured vertically between the nosings of adjacent treads or between the stairway landing and the adjacent tread. Rectangular tread depths shall be 11 inches (279 mm) minimum measured horizontally between the vertical planes of the foremost projection of adjacent treads and at a right angle to the tread's nosing. Winder treads shall have a minimum tread depth of 11 inches (279 mm) between the vertical planes of the foremost projection of adjacent treads at the intersections with the walkline and a minimum tread depth of 10 inches (254 mm) within the clear width of the stair.

Exceptions:

1. Spiral stairways in accordance with Section 1011.10.
2. Stairways connecting stepped aisles to cross aisles or concourses shall be permitted to use the riser/tread dimension in Section 1030.14.2.
3. In Group R-3 occupancies; within dwelling units in Group R-2 occupancies not required by Chapter 11*A or Chapter 11B* to be Accessible; and in Group U occupancies that are accessory to a Group R-3 occupancy or accessory to individual dwelling units in Group R-2 occupancies; the maximum riser height shall be $7^3/_4$ inches (197 mm); the minimum tread depth shall be 10 inches (254 mm); the minimum winder tread depth at the walkline shall be 10 inches (254 mm); and the minimum winder tread depth shall be 6 inches (152 mm). A nosing projection not less than $^3/_4$ inch (19.1 mm) but not more than $1^1/_4$ inches (32 mm) shall be provided on stairways with solid risers where the tread depth is less than 11 inches (279 mm).
4. See *California Fire Code Chapter 11 and California Existing Building Code* for the replacement of existing stairways. ***[DSA-AC]*** *For applications listed in Section 1.9.1 regulated by the Division of the State Architect—Access Compliance, see Chapter 11B, Section 11B-202.*
5. In Group I-3 facilities, stairways providing access to guard towers, observation stations and control rooms, not more than 250 square feet (23 m^2) in area, shall be permitted to have a maximum riser height of 8 inches (203 mm) and a minimum tread depth of 9 inches (229 mm).
6. ***[SFM]*** *Stairways providing access to lifeguard towers not open to the public, not more than 250 square feet (23 m^2) in area, shall be permitted to have a maximum riser height of 8 inches (203 mm) and a minimum tread depth of 9 inches (229 mm).*

1011.5.3 Winder treads. Winder treads are not permitted in means of egress stairways except within a dwelling unit.

Exceptions:

1. Curved stairways in accordance with Section 1011.9.
2. Spiral stairways in accordance with Section 1011.10.

1011.5.4 Dimensional uniformity. Stair treads and risers shall be of uniform size and shape. The tolerance between the largest and smallest riser height or between the largest and smallest tread depth shall not exceed $^3/_8$ inch (9.5 mm) in any flight of stairs. The greatest winder tread depth at the walkline within any flight of stairs shall not exceed the smallest by more than $^3/_8$ inch (9.5 mm).

Exceptions:

1. Stairways connecting stepped aisles to cross aisles or concourses shall be permitted to comply with the dimensional nonuniformity in Section 1030.14.2.
2. Consistently shaped winders, complying with Section 1011.5, differing from rectangular treads in the same flight of stairs.
3. Nonuniform riser dimension complying with Section 1011.5.4.1.

1011.5.4.1 Nonuniform height risers. Where the bottom or top riser adjoins a sloping public way, walkway or driveway having an established grade and serving as a landing, the bottom or top riser is permitted to be reduced along the slope to less than 4 inches (102 mm) in height, with the variation in height of the bottom or top riser not to exceed one unit vertical in 12 units horizontal (8-percent slope) of stair width. The nosings at such nonuniform height risers shall have a distinctive marking stripe, different from any other nosing marking provided on the stair flight. The distinctive marking stripe shall be visible in descent of the stair. Marking stripes shall have a width of not less than 1 inch (25 mm) but not more than 2 inches (51 mm).

1011.5.5 Nosing and riser profile. Nosings shall have a curvature or bevel of not less than $^1/_{16}$ inch (1.6 mm) but not more than $^9/_{16}$ inch (14.3 mm) from the foremost projection of the tread. Risers shall be solid and vertical or sloped under the tread above from the underside of the nosing above at an angle not more than 30 degrees (0.52 rad) from the vertical.

1011.5.5.1 Nosing projection size. The nosings shall project not more than $1^1/_4$ inches (32 mm) beyond the tread below.

Exception: When solid risers are not required, the nosing projection is permitted to exceed the maximum projection.

1011.5.5.2 Nosing projection uniformity. Nosing projections shall be of uniform size, including the projections of the nosings of the floor or landing at the top of a flight.

1011.5.5.3 Solid risers. Risers shall be solid.

Exceptions:

1. Solid risers are not required for stairways that are not required to comply with Section 1009.3, provided that the opening between treads does not permit the passage of a sphere with a diameter of 4 inches (102 mm).
2. Solid risers are not required for occupancies in Group I-3 or in Group F, H and S occupancies other than areas accessible to the public. The size of the opening in the riser is not restricted.
3. Solid risers are not required for spiral stairways constructed in accordance with Section 1011.10.

1011.6 Stairway landings. There shall be a floor or landing at the top and bottom of each stairway. The width of landings, measured perpendicularly to the direction of travel, shall be not less than the width of stairways served. Every landing shall have a minimum depth, measured parallel to the direction of travel, equal to the width of the stairway or 48 inches (1219 mm), whichever is less. Doors opening onto a landing shall not reduce the landing to less than one-half the required width. When fully open, the door shall not project more than 7 inches (178 mm) into the required width of a landing. Where wheelchair spaces are required on the stairway landing in accordance with Section 1009.6.3, the wheelchair space shall not be located in the required width of the landing and doors shall not swing over the wheelchair spaces.

Exceptions:

1. Where stairways connect stepped aisles to cross aisles or concourses, stairway landings are not required at the transition between stairways and stepped aisles constructed in accordance with Section 1030.
2. Where curved stairways of constant radius have intermediate landings, the landing depth shall be measured horizontally between the intersection of the walkline of the lower flight at the landing nosing and the intersection of the walkline of the upper flight at the nosing of the lowest tread of the upper flight.
3. Where a landing turns 90 degrees (1.57 rad) or more, the minimum landing depth in accordance with this section shall not be required where the landing provided is not less than that described by an arc with a radius equal to the width of the flight served.
4. *In Group R-3 occupancies a floor or landing is not required at the top of an interior flight of stairs, including stairs in an enclosed garage, provided a door does not swing over the stairs.*

1011.7 Stairway construction. Stairways shall be built of materials consistent with the types permitted for the type of construction of the building.

Exceptions:

1. Wood handrails shall be permitted in all types of construction.
2. Interior exit stairways in accordance with Section 510.2.

1011.7.1 Stairway walking surface. The walking surface of treads and landings of a stairway shall not be sloped steeper than one unit vertical in 48 units horizontal (2-percent slope) in any direction. Stairway treads and landings shall have a solid surface. Finish floor surfaces shall be securely attached.

Exceptions:

1. Openings in stair walking surfaces shall be a size that does not permit the passage of $^1/_2$-inch-diameter (12.7 mm) sphere. Elongated openings shall be placed so that the long dimension is perpendicular to the direction of travel.
2. In Group F, H and S occupancies, other than areas of parking structures accessible to the public, openings in treads and landings shall not be prohibited provided that a sphere with a diameter of $1^1/_8$ inches (29 mm) cannot pass through the opening.

1011.7.2 Outdoor conditions. Outdoor stairways and outdoor approaches to stairways shall be designed so that water will not accumulate on walking surfaces.

1011.7.3 Enclosures under interior stairways. The walls and soffits within enclosed usable spaces under enclosed and unenclosed stairways shall be protected by 1-hour fire-resistance-rated construction or the fire-resistance rating of the stairway enclosure, whichever is greater. Access to the enclosed space shall not be directly from within the stairway enclosure.

Exception: Spaces under stairways serving and contained within a single residential dwelling unit in Group R-2 or R-3 shall be permitted to be protected on the enclosed side with $^1/_2$-inch (12.7 mm) gypsum board.

1011.7.4 Enclosures under exterior stairways. There shall not be enclosed usable space under exterior exit stairways unless the space is completely enclosed in 1-hour fire-resistance-rated construction. The open space under exterior stairways shall not be used for any purpose.

1011.8 Vertical rise. A flight of stairs shall not have a vertical rise greater than 12 feet (3658 mm) between floor levels or landings.

Exception: Spiral stairways used as a means of egress from technical production areas.

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1011.9 Curved stairways. Curved stairways with winder treads shall have treads and risers in accordance with Section 1011.5 and the smallest radius shall be not less than twice the minimum width or required capacity of the stairway.

Exception: The radius restriction shall not apply to curved stairways in Group R-3 and within individual dwelling units in Group R-2.

1011.10 Spiral stairways. Spiral stairways are permitted to be used as a component in the means of egress only within dwelling units or from a space not more than 250 square feet (23 m^2) in area and serving not more than five occupants, or from technical production areas in accordance with Section 410.5.

A spiral stairway shall have a $6^3/_4$-inch (171 mm) minimum clear tread depth at a point 12 inches (305 mm) from the narrow edge. The risers shall be sufficient to provide a headroom of 78 inches (1981 mm) minimum, but riser height shall not be more than $9^1/_2$ inches (241 mm). The minimum stairway clear width at and below the handrail shall be 26 inches (660 mm).

1011.11 Handrails. Flights of stairways shall have handrails on each side and shall comply with Section 1014. Where glass is used to provide the handrail, the handrail shall comply with Section 2407.

[DSA-AC] *For applications listed in Section 1.9.1 regulated by the Division of the State Architect—Access Compliance, see Chapter 11B, Sections 11B-504.6 and 11B-505.*

Exceptions:

1. Flights of stairways within dwelling units and flights of spiral stairways are permitted to have a handrail on one side only.
2. Decks, patios and walkways that have a single change in elevation where the landing depth on each side of the change of elevation is greater than what is required for a landing do not require handrails.
3. ***[SFM]*** In Group R-3 occupancies, *a continuous run of treads or flight of stairs with less than four risers does not require handrails.*
4. Changes in room elevations of three or fewer risers within dwelling units and sleeping units in Groups R-2 and R-3 do not require handrails.
5. Where a platform lift is in a stationary position and the floor of the platform lift serves as the upper landing of a stairway, handrails shall not be required on the stairway, provided that all of the following criteria are met:
   5.1. The stairway contains not more than two risers.
   5.2. A handhold, positioned horizontally or vertically, is located on one side of the stairway adjacent to the top landing.
   5.3. The handhold is located not less than 34 inches (864 mm) and not more than 42 inches (1067 mm) above the bottom landing of the stairway.
   5.4. The handhold gripping surface complies with Section 1014.4, and is not less than 4.5 inches (114 mm) in length.

1011.12 Stairway to roof. In buildings four or more stories above grade plane, one stairway shall extend to the roof surface unless the roof has a slope steeper than four units vertical in 12 units horizontal (33-percent slope).

Exception: Other than where required by Section 1011.12.1, in buildings without an occupiable roof access to the roof from the top story shall be permitted to be by an alternating tread device, a ship's ladder or a permanent ladder.

1011.12.1 Stairway to elevator equipment. Roofs and penthouses containing elevator equipment that must be accessed for maintenance are required to be accessed by a stairway.

1011.12.2 Roof access. Where a stairway is provided to a roof, access to the roof shall be provided through a penthouse complying with Section 1511.2.

Exception: In buildings without an occupiable roof, access to the roof shall be permitted to be a roof hatch or trap door not less than 16 square feet (1.5 m^2) in area and having a minimum dimension of 2 feet (610 mm).

1011.13 Guards. Guards shall be provided along stairways and landings where required by Section 1015 and shall be constructed in accordance with Section 1015. Where the roof hatch opening providing the required access is located within 10 feet (3049 mm) of the roof edge, such roof access or roof edge shall be protected by guards installed in accordance with Section 1015.

1011.14 Alternating tread devices. Alternating tread devices are limited to an element of a means of egress in buildings of Groups F, H and S from a mezzanine not more than 250 square feet (23 m^2) in area and that serves not more than five occupants; in buildings of Group I-3 from a guard tower, observation station or control room not more than 250 square feet (23 m^2) in area and for access to unoccupiable roofs. Alternating tread devices used as a means of egress shall not have a rise greater than 20 feet (6096 mm) between floor levels or landings.

1011.14.1 Handrails of alternating tread devices. Handrails shall be provided on both sides of alternating tread devices and shall comply with Section 1014.

1011.14.2 Treads of alternating tread devices. Alternating tread devices shall have a minimum tread depth of 5 inches (127 mm), a minimum projected tread depth of $8^1/_2$ inches (216 mm), a minimum tread width of 7 inches (178 mm) and a maximum riser height of $9^1/_2$ inches (241 mm). The tread depth shall be measured horizontally between the vertical planes of the foremost projections of adjacent treads. The riser height shall be measured vertically between the leading edges of adjacent treads. The riser height and tread depth provided shall result in an angle of ascent from the horizontal of between 50 and 70 degrees (0.87 and 1.22 rad). The initial tread of the device shall begin at the same elevation as the platform, landing or floor surface.

Exception: Alternating tread devices used as an element of a means of egress in buildings from a mezzanine area not more than 250 square feet (23 m^2) in area that serves not more than five occupants shall have a minimum tread depth of 3 inches (76 mm)

with a minimum projected tread depth of $10^1/_2$ inches (267 mm). The rise to the next alternating tread surface shall not exceed 8 inches (203 mm).

1011.15 Ship's ladders. Ship's ladders are permitted to be used in *lifeguard towers not open to the public and* Group I-3 as a component of a means of egress to and from control rooms or elevated facility observation stations not more than 250 square feet (23 m^2) with not more than three occupants and for access to unoccupiable roofs. The minimum clear width at and below the handrails shall be 20 inches (508 mm). Ship's ladders shall be designed for the live loads indicated in Section 1607.10.

1011.15.1 Handrails of ship's ladders. Handrails shall be provided on both sides of ship's ladders.

1011.15.2 Treads of ship's ladders. Ship's ladders shall have a minimum tread depth of 5 inches (127 mm). The tread shall be projected such that the total of the tread depth plus the nosing projection is not less than $8^1/_2$ inches (216 mm). The maximum riser height shall be $9^1/_2$ inches (241 mm).

1011.16 Ladders. Permanent ladders shall not serve as a part of the means of egress from occupied spaces within a building. Permanent ladders shall be constructed in accordance with Section *304.3* of the *California Mechanical Code* and designed for the live loads indicated in Section 1607.10. Permanent ladders shall be permitted to provide access to the following areas:

1. Spaces frequented only by personnel for maintenance, repair or monitoring of equipment.
2. Nonoccupiable spaces accessed only by catwalks, crawl spaces, freight elevators or very narrow passageways.
3. Raised areas used primarily for purposes of security, life safety or fire safety including, but not limited to, observation galleries, prison guard towers, fire towers or lifeguard stands.
4. Elevated levels in Group U not open to the general public.
5. Nonoccupiable roofs that are not required to have stairway access in accordance with Section 1011.12.1.
6. Where permitted to access equipment and appliances in accordance with Section *304.3* of the *California Mechanical Code*.

SECTION 1012—RAMPS

[DSA-AC] *In addition to the requirements of this section, means of egress, which provide access to, or egress from, buildings or facilities where accessibility is required for applications listed in Section 1.9.1 regulated by the Division of the State Architect—Access Compliance, shall also comply with Chapter 11A or Chapter 11B, Section 11B-405, as applicable.*

1012.1 Scope. The provisions of this section shall apply to ramps used as a component of a means of egress.

Exceptions:

1. Ramped aisles within assembly rooms or spaces shall comply with the provisions in Section 1030.
2. Curb ramps shall comply with *Chapter 11A or 11B, 11B-406, as applicable.*
3. Vehicle ramps in parking garages for pedestrian exit access shall not be required to comply with Sections 1012.3 through 1012.10 where they are not an accessible route serving accessible parking spaces, other required accessible elements or part of an accessible means of egress.

1012.2 Slope. Ramps used as part of a means of egress shall have a running slope not steeper than 1 unit vertical in 12 units horizontal (8.3-percent slope). The slope of other pedestrian ramps shall not be steeper than 1 unit vertical in 8 units horizontal (12.5-percent slope).

1012.3 Cross slope. The slope measured perpendicular to the direction of travel of a ramp shall not be steeper than one unit vertical in 48 units horizontal (2-percent slope).

1012.4 Vertical rise. The rise for any ramp run shall be 30 inches (762 mm) maximum.

1012.5 Minimum dimensions. The minimum dimensions of means of egress ramps shall comply with Sections 1012.5.1 through 1012.5.3.

1012.5.1 Width and capacity. The minimum width and required capacity of a means of egress ramp shall be not less than that required for corridors by Section 1020.3. The clear width of a ramp between handrails, if provided, or other permissible projections shall be 36 inches (914 mm) minimum.

1012.5.2 Headroom. The minimum headroom in all parts of the means of egress ramp shall be not less than 80 inches (2032 mm) above the finished floor of the ramp run and any intermediate landings. The minimum clearance shall be maintained for the full width of the ramp and landing.

1012.5.3 Restrictions. Means of egress ramps shall not reduce in width in the direction of egress travel. Projections into the required ramp and landing width are prohibited. Doors opening onto a landing shall not reduce the clear width to less than 42 inches (1067 mm).

1012.6 Landings. Ramps shall have landings at the bottom and top of each ramp, points of turning, entrance, exits and at doors. Landings shall comply with Sections 1012.6.1 through 1012.6.5.

1012.6.1 Slope. Landings shall have a slope not steeper than one unit vertical in 48 units horizontal (2-percent slope) in any direction. Changes in level are not permitted.

1012.6.2 Width. The landing width shall be not less than the width of the widest ramp run adjoining the landing.

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1012.6.3 Length. The landing length shall be 60 inches (1525 mm) minimum.

Exceptions:

1. In Group R-2 and R-3 individual dwelling and sleeping units that are not required to be *accessible* in accordance with *Chapter 11A*, landings are permitted to be 36 inches (914 mm) minimum.
2. Where the ramp is not a part of an accessible route, the length of the landing shall not be required to be more than 48 inches (1219 mm) in the direction of travel.

1012.6.4 Change in direction. Where changes in direction of travel occur at landings provided between ramp runs, the landing shall be 60 inches by 60 inches (1524 mm by 1524 mm) minimum.

Exception: In Group R-2 and R-3 individual dwelling and sleeping units that are not required to be *accessible* in accordance with *Chapter 11A*, landings are permitted to be 36 inches (914 mm) minimum.

1012.6.5 Doorways. Where doorways are located adjacent to a ramp landing, maneuvering clearances required *for accessibility* are permitted to overlap the required landing area *as specified in Chapter 11A or 11B, as applicable.*

1012.7 Ramp construction. Ramps shall be built of materials consistent with the types permitted for the type of construction of the building, except that wood handrails shall be permitted for all types of construction.

1012.7.1 Ramp surface. The surface of ramps shall be of slip-resistant materials that are securely attached.

1012.7.2 Outdoor conditions. Outdoor ramps and outdoor approaches to ramps shall be designed so that water will not accumulate on walking surfaces.

1012.8 Handrails. Ramps with a rise greater than 6 inches (152 mm) shall have handrails on both sides. Handrails shall comply with Section 1014.

1012.9 Guards. Guards shall be provided where required by Section 1015 and shall be constructed in accordance with Section 1015.

1012.10 Edge protection. Edge protection complying with Section 1012.10.1 or 1012.10.2 shall be provided on each side of ramp runs and at each side of ramp landings.

Exceptions:

1. Edge protection is not required on ramps that are not required to have handrails, provided they have flared sides that comply with *Chapter 11A or 11B.*
2. Edge protection is not required on the sides of ramp landings serving an adjoining ramp run or stairway.
3. Edge protection is not required on the sides of ramp landings having a vertical dropoff of not more than $^1/_2$ inch (12.7 mm) within 10 inches (254 mm) horizontally of the required landing area.

1012.10.1 Curb, rail, wall or barrier. A curb, rail, wall or barrier shall be provided to serve as edge protection. A curb shall be not less than 4 inches (102 mm) in height. Barriers shall be constructed so that the barrier prevents the passage of a 4-inch-diameter (102 mm) sphere, where any portion of the sphere is within 4 inches (102 mm) of the floor or ground surface.

1012.10.2 Extended floor or ground surface. The floor or ground surface of the ramp run or landing shall extend 12 inches (305 mm) minimum beyond the inside face of a handrail complying with Section 1014.

SECTION 1013—EXIT SIGNS

1013.1 Where required. Exits and exit access doors shall be marked by an approved exit sign readily visible from any direction of egress travel. The path of egress travel to exits and within exits shall be marked by readily visible exit signs to clearly indicate the direction of egress travel in cases where the exit or the path of egress travel is not immediately visible to the occupants. Intervening means of egress doors within exits shall be marked by exit signs. Exit sign placement shall be such that any point in an exit access corridor or exit passageway is within 100 feet (30 480 mm) or the listed viewing distance of the sign, whichever is less, from the nearest visible exit sign.

Exceptions:

1. Exit signs are not required in rooms or areas that require only one exit or exit access.
2. Main exterior exit doors or gates that are obviously and clearly identifiable as exits need not have exit signs where approved by the building official.
3. Exit signs are not required in occupancies in Group U and individual sleeping units or dwelling units in Group R-1, R-2 or R-3 *or R-3.1*.
4. Exit signs are not required *where inmates are housed or held* in dayrooms, sleeping rooms or dormitories in occupancies in Group I-3.
5. In occupancies in Groups A-4 and A-5, exit signs are not required on the seating side of vomitories or openings into seating areas where exit signs are provided in the concourse that are readily apparent from the vomitories. Egress lighting is provided to identify each vomitory or opening within the seating area in an emergency.

1013.2 Low-level exit signs in Group R-1. *See Section 1013.7.*

1013.3 Illumination. Exit signs shall be internally or externally illuminated.

Exception: Tactile signs required by Section 1013.4 need not be provided with illumination.

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1013.4 Raised character and braille exit signs. *[HCD 1-AC] Tactile exit signs shall be required at the following locations:*

1. *Each grade-level exterior exit door that is required to comply with Section 1013.1, shall be identified by a tactile exit sign with the word, "EXIT".*
2. *Each exit door that is required to comply with Section 1013.1, and that leads directly to a grade-level exterior exit by means of a stairway or ramp shall be identified by a tactile exit sign with the following words as appropriate:*
   - *2.1. "EXIT STAIR DOWN"*
   - *2.2. "EXIT RAMP DOWN"*
   - *2.3. "EXIT STAIR UP"*
   - *2.4. "EXIT RAMP UP"*
3. *Each exit door that is required to comply with Section 1013.1, and that leads directly to a grade-level exterior exit by means of an exit enclosure or an exit passageway shall be identified by a tactile exit sign with the words, "EXIT ROUTE."*
4. *Each exit access door from an interior room or area to a corridor or hallway that is required to comply with Section 1013.1, shall be identified by a tactile exit sign with the words "EXIT ROUTE."*
5. *Each exit door through a horizontal exit that is required to comply with Section 1013.1, shall be identified by a sign with the words, "TO EXIT."*

Raised character and Braille exit signs shall comply with Chapter 11A, Section 1143A or Chapter 11B, Sections 11B-703.1, 11B-703.2, 11B-703.3 and 11B-703.5.

1013.5 Internally illuminated exit signs. Electrically powered, self-luminous and photoluminescent exit signs shall be listed and labeled in accordance with UL 924 and shall be installed in accordance with the manufacturer's instructions and Chapter 27. Exit signs shall be illuminated at all times.

1013.5.1 Photoluminescent exit signs. Photoluminescent exit signs shall be provided with an illumination source to charge the exit sign in accordance with the manufacturer's instructions.

1013.6 Externally illuminated exit signs. Externally illuminated exit signs shall comply with Sections 1013.6.1 through 1013.6.3.

1013.6.1 Graphics. Every exit sign and directional exit sign shall have plainly legible letters not less than 6 inches (152 mm) high with the principal strokes of the letters not less than $^3/_4$ inch (19.1 mm) wide. The word "EXIT" shall have letters having a width not less than 2 inches (51 mm) wide, except the letter "I," and the minimum spacing between letters shall be not less than $^3/_8$ inch (9.5 mm). Signs larger than the minimum established in this section shall have letter widths, strokes and spacing in proportion to their height.

The word "EXIT" shall be in high contrast with the background and shall be clearly discernible when the means of exit sign illumination is or is not energized. If a chevron directional indicator is provided as part of the exit sign, the construction shall be such that the direction of the chevron directional indicator cannot be readily changed.

1013.6.2 Exit sign illumination. The face of an exit sign illuminated from an external source shall have an intensity of not less than 5 footcandles (54 lux).

1013.6.3 Power source. Exit signs shall be illuminated at all times. To ensure continued illumination for a duration of not less than 90 minutes in case of primary power loss, the sign illumination means shall be connected to an emergency power system provided from storage batteries, unit equipment or an on-site generator. The installation of the emergency power system shall be in accordance with Chapter 27. Group I-2 exit sign illumination shall not be provided by unit equipment batteries only.

Exception: Approved exit sign illumination types that provide continuous illumination independent of external power sources for a duration of not less than 90 minutes, in case of primary power loss, are not required to be connected to an emergency electrical system.

1013.7 Floor-level exit signs. *Where exit signs are required by Chapter 10, additional approved low-level exit signs which are internally or externally illuminated photoluminescent or self-luminous, shall be provided in all interior corridors of Group A, E, I and R-2.1 occupancies and in all areas serving guest rooms of hotels in Group R, Division 1 occupancies.*

Exceptions:

1. *Group A occupancies that are protected throughout by an approved supervised fire sprinkler system.*
2. *Group E Occupancies where direct exits have been provided from each classroom.*
3. *Group I and R-2.1 occupancies which are provided with smoke barriers constructed in accordance with Section 407.5.*
4. *Group I-3 occupancies.*

The bottom of the sign shall not be less than 6 inches (152 mm) or more than 8 inches (203 mm) above the floor level and shall indicate the path of exit travel. For exit and exit-access doors, the sign shall be on the door or adjacent to the door with the closest edge of the sign or marker within 4 inches (102 mm) of the door frame.

Note: *Pursuant to Health and Safety Code Section 13143, this California amendment applies to all newly constructed buildings or structures subject to this section for which a building permit is issued (or construction commenced, where no building permit is issued) on or after January 1, 1989.*

1013.8 Path marking. *When exit signs are required by Chapter 10, in addition to approved floor-level exit signs, approved path marking shall be installed at floor level or no higher than 8 inches (203 mm) above the floor level in all interior rated exit corridors of unsprinklered Group A, R-1 and R-2 occupancies.*

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Such marking shall be continuous except as interrupted by door-ways, corridors or other such architectural features in order to provide a visible delineation along the path of travel.

Note: *Pursuant to Health and Safety Code Section 13143, the California amendments of this section shall apply to all newly constructed buildings or structures subject to this section for which a building permit is issued (or construction commenced, where no building permit is issued) on or after January 1, 1989.*

SECTION 1014—HANDRAILS

[DSA-AC] *In addition to the requirements of this section, means of egress, which provide access to, or egress from, buildings or facilities where accessibility is required for applications listed in Section 1.9.1 regulated by the Division of the State Architect—Access Compliance, shall also comply with Chapter 11A or Chapter 11B, Section 11B-505, as applicable.*

1014.1 Where required. Handrails serving flights of stairways, ramps, stepped aisles and ramped aisles shall be adequate in strength and attachment in accordance with Section 1607.9. Handrails required for flights of stairways by Section 1011.11 shall comply with Sections 1014.2 through 1014.10. Handrails required for ramps by Section 1012.8 shall comply with Sections 1014.2 through 1014.9. Handrails for stepped aisles and ramped aisles required by Section 1030.16 shall comply with Sections 1014.2 through 1014.9.

1014.2 Height. Handrail height, measured from a line connecting the nosings of flights of stairs or finish surface of ramp slope, shall be uniform, not less than 34 inches (864 mm) and not more than 38 inches (965 mm). Handrail height of alternating tread devices and ship's ladders, measured from a line connecting the nosings, shall be uniform, not less than 30 inches (762 mm) and not more than 34 inches (864 mm).

Exceptions:

1. Where handrail fittings or bendings are used to provide continuous transition between flights, the fittings or bendings shall be permitted to exceed the maximum height.
2. In Group R-3 occupancies; within dwelling units in Group R-2 occupancies; and in Group U occupancies that are associated with a Group R-3 occupancy or associated with individual dwelling units in Group R-2 occupancies; where handrail fittings or bendings are used to provide continuous transition between flights, transition at winder treads, transition from handrail to guard, or where used at the start of a flight, the handrail height at the fittings or bendings shall be permitted to exceed the maximum height.
3. Handrails on top of a guard where permitted along stepped aisles and ramped aisles in accordance with Section 1030.16.

1014.3 Lateral location. Handrails located outward from the edge of the walking surface of flights of stairways, ramps, stepped aisles and ramped aisles shall be located 6 inches (152.4 mm) or less measured horizontally from the edge of the walking surface. Handrails projecting into the width of the walking surface shall comply with Section 1014.9.

1014.4 Handrail graspability. Required handrails shall comply with Section 1014.4.1 or shall provide equivalent graspability.

Exception: In Group R-3 occupancies; within dwelling units in Group R-2 occupancies; and in Group U occupancies that are accessory to a Group R-3 occupancy or accessory to individual dwelling units in Group R-2 occupancies; handrails shall be Type I in accordance with Section 1014.4.1, Type II in accordance with Section 1014.4.2 or shall provide equivalent graspability.

1014.4.1 Type I. Handrails with a circular cross section shall have an outside diameter of not less than $1^1/_4$ inches (32 mm) and not greater than 2 inches (51 mm). Where the handrail is not circular, it shall have a perimeter dimension of not less than 4 inches (102 mm) and not greater than $6^1/_4$ inches (160 mm) with a maximum cross-sectional dimension of $2^1/_4$ inches (57 mm) and minimum cross-sectional dimension of 1 inch (25 mm). Edges shall have a minimum radius of 0.01 inch (0.25 mm).

1014.4.2 Type II. Handrails with a perimeter greater than $6^1/_4$ inches (160 mm) shall provide a graspable finger recess area on both sides of the profile. The finger recess shall begin within a distance of $^3/_4$ inch (19 mm) measured vertically from the tallest portion of the profile and achieve a depth of not less than $^5/_{16}$ inch (8 mm) within $^7/_8$ inch (22 mm) below the widest portion of the profile. This required depth shall continue for not less than $^3/_8$ inch (10 mm) to a level that is not less than $1^3/_4$ inches (45 mm) below the tallest portion of the profile. The width of the handrail above the recess shall be not less than $1^1/_4$ inches (32 mm) to not greater than $2^3/_4$ inches (70 mm). Edges shall have a minimum radius of 0.01 inch (0.25 mm).

1014.5 Continuity. Handrail gripping surfaces shall be continuous, without interruption by newel posts or other obstructions.

Exceptions:

1. Within a dwelling unit that is not an Accessible unit, the continuity of handrail gripping surfaces is allowed to be interrupted by a newel post at a turn or landing.
2. Within a dwelling unit, the use of a volute, turnout, starting easing or starting newel is allowed over the lowest tread.
3. Handrail brackets or balusters attached to the bottom surface of the handrail that do not project horizontally beyond the sides of the handrail within $1^1/_2$ inches (38 mm) of the bottom of the handrail shall not be considered obstructions. For each $^1/_2$ inch (12.7 mm) of additional handrail perimeter dimension above 4 inches (102 mm), the vertical clearance dimension of $1^1/_2$ inches (38 mm) shall be permitted to be reduced by $^1/_8$ inch (3.2 mm).
4. Where handrails are provided along walking surfaces with slopes not steeper than 1:20, the bottoms of the handrail gripping surfaces shall be permitted to be obstructed along their entire length where they are integral to crash rails or bumper guards.

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5. Handrails serving stepped aisles or ramped aisles are permitted to be discontinuous in accordance with Section 1030.16.1.

1014.6 Fittings. Handrails shall not rotate within their fittings.

1014.7 Handrail extensions. Handrails shall return to a wall, guard or the walking surface or shall be continuous to the handrail of an adjacent flight of stairs or ramp run. Where handrails are not continuous between flights, the handrails shall extend horizontally not less than 12 inches (305 mm) beyond the top landing nosing and continue to slope for the depth of one tread beyond the bottom tread nosing. At ramps where handrails are not continuous between runs, the handrails shall extend horizontally above the landing 12 inches (305 mm) minimum beyond the top and bottom of ramp runs. The extensions of handrails shall be in the same direction of the flights of stairs at stairways and the ramp runs at ramps and shall extend the required minimum length before any change in direction or decrease in the clearance required by Section 1014.5 or 1014.8.

Exceptions:

1. Handrails within a dwelling unit that is not required to be accessible need extend only from the top riser to the bottom riser.
2. Handrails serving aisles in rooms or spaces used for assembly purposes are permitted to comply with the handrail extensions in accordance with Section 1030.16.
3. Handrails for alternating tread devices and ships ladders are permitted to terminate at a location vertically above the top and bottom risers. Handrails for alternating tread devices are not required to be continuous between flights or to extend beyond the top or bottom risers.

1014.8 Clearance. Clear space between a handrail and a wall or other surface shall be not less than $1^1/_2$ inches (38 mm). A handrail and a wall or other surface adjacent to the handrail shall be free of any sharp or abrasive elements.

Exceptions:

1. A decrease in the clearance due to the curvature or angle of handrail returns shall be allowed.
2. Mounting flanges not more than $^1/_2$-inch (12.7 mm) in thickness at the returned ends of handrails shall be allowed.

1014.9 Projections. On ramps and on ramped aisles that are part of an accessible route, the clear width between handrails shall be 36 inches (914 mm) minimum. Projections into the required width of aisles, stairways and ramps at each side shall not exceed $4^1/_2$ inches (114 mm) at or below the handrail height. Projections into the required width shall not be limited above the minimum headroom height required in Section 1011.3. Projections due to intermediate handrails shall not constitute a reduction in the egress width. Where a pair of intermediate handrails are provided within the stairway width without a walking surface between the pair of intermediate handrails and the distance between the pair of intermediate handrails is greater than 6 inches (152 mm), the available egress width shall be reduced by the distance between the closest edges of each such intermediate pair of handrails that is greater than 6 inches (152 mm).

In Group I-2 occupancy ramps required for exit access shall not be less than 8 ft in width and handrails are permitted to protrude $3^1/_2$ inches from the wall on both sides. Ramps used as exits and stairways used for the movement of bed and litter patients, the clear width between handrails shall be 44 inches (1118 mm) minimum.

[HCD 1-AC] *In addition, projections shall comply with Chapter 11A, when applicable.*

1014.10 Intermediate handrails. Stairways shall have intermediate handrails located in such a manner that all portions of the stairway minimum width or required capacity are within 30 inches (762 mm) of a handrail. On monumental stairs, handrails shall be located along the most direct path of egress travel.

SECTION 1015—GUARDS

1015.1 General. Guards shall comply with the provisions of Sections 1015.2 through 1015.7. Operable windows with sills located more than 72 inches (1829 mm) above finished grade or other surface below shall comply with Section 1015.8.

1015.2 Where required. Guards shall be located along open-sided walking surfaces, such as mezzanines, equipment platforms, aisles, stairs, ramps and landings, that are located more than 30 inches (762 mm) measured vertically to the floor or grade below at any point within 36 inches (914 mm) horizontally to the edge of the open side and at the perimeter of occupiable roofs. Guards shall be adequate in strength and attachment in accordance with Section 1607.9.

Exceptions: Guards are not required for the following locations:

1. On the loading side of loading docks or piers.
2. On the audience side of stages and raised platforms, including stairs leading up to the stage and raised platforms.
3. On raised stage and platform floor areas, such as runways, ramps and side stages used for entertainment or presentations.
4. At vertical openings in the performance area of stages and platforms.
5. At elevated walking surfaces appurtenant to stages and platforms for access to and utilization of special lighting or equipment.
6. Along vehicle service pits not accessible to the public.
7. In assembly seating areas at cross aisles in accordance with Section 1030.17.2.
8. On the loading side of station platforms on fixed guideway transit or passenger rail systems.

9. Portions of an occupiable roof located less than 30 inches (762 mm) measured vertically to adjacent unoccupiable roof areas where approved guards are present at the perimeter of the roof.
10. At portions of an occupiable roof where an approved barrier is provided.
11. *Elevated facility observation station access hatches at detention facilities.*

1015.2.1 Glazing. Where glass is used to provide a guard or as a portion of the guard system, the guard shall comply with Section 2407. Where the glazing provided does not meet the strength and attachment requirements of Section 1607.9, complying guards shall be located along glazed sides of open-sided walking surfaces.

1015.3 Height. Required guards shall be not less than 42 inches (1067 mm) high, measured vertically as follows:

1. From the adjacent walking surfaces.
2. On stairways and stepped aisles, from the line connecting the nosings.
3. On ramps and ramped aisles, from the ramp surface at the guard.

Exceptions:

1. For occupancies in Group R-3, and within individual dwelling units in occupancies in Group R-2, guards on the open sides of stairs shall have a height not less than 34 inches (864 mm) measured vertically from a line connecting the nosings.
2. For occupancies in Group R-3, and within individual dwelling units in occupancies in Group R-2, where the top of the guard serves as a handrail on the open sides of stairs, the top of the guard shall be not less than 34 inches (864 mm) and not more than 38 inches (965 mm) measured vertically from a line connecting the nosings.
3. The guard height in assembly seating areas shall comply with Section 1030.17 as applicable.
4. Along alternating tread devices and ships ladders, guards where the top rail serves as a handrail shall have height not less than 30 inches (762 mm) and not more than 34 inches (864 mm), measured vertically from a line connecting the leading edge of the treads.
5. In Group F occupancies where exit access stairways serve fewer than three stories and such stairways are not open to the public, and where the top of the guard also serves as a handrail, the top of the guard shall be not less than 34 inches (864 mm) and not more than 38 inches (965 mm) measured vertically from a line connecting the nosings.

1015.4 Opening limitations. Required guards shall not have openings that allow passage of a sphere 4 inches (102 mm) in diameter from the walking surface to the required guard height.

Exceptions:

1. From a height of 36 inches (914 mm) to 42 inches (1067 mm), guards shall not have openings that allow passage of a sphere $4^3/_8$ inches (111 mm) in diameter.
2. The triangular openings at the open sides of a stair, formed by the riser, tread and bottom rail shall not allow passage of a sphere 6 inches (152 mm) in diameter.
3. At elevated walking surfaces for access to and use of electrical, mechanical or plumbing systems or equipment, guards shall not have openings that allow passage of a sphere 21 inches (533 mm) in diameter.
4. In areas that are not open to the public within occupancies in Group I-3, F, H or S, and for alternating tread devices and ships ladders, guards shall not have openings that allow passage of a sphere 21 inches (533 mm) in diameter.
5. In assembly seating areas, guards required at the end of aisles in accordance with Section 1030.17.4 shall not have openings that allow passage of a sphere 4 inches (102 mm) in diameter up to a height of 26 inches (660 mm). From a height of 26 inches (660 mm) to 42 inches (1067 mm) above the adjacent walking surfaces, guards shall not have openings that allow passage of a sphere 8 inches (203 mm) in diameter.
6. Within individual dwelling units and sleeping units in Group R-2 and R-3 occupancies, guards on the open sides of stairs shall not have openings that allow passage of a sphere $4^3/_8$ (111 mm) inches in diameter.
7. *In lifeguard towers not open to the public, guards shall not have openings which allow passage of a sphere 21 inches (533 mm) in diameter.*

1015.5 Screen porches. Porches and decks that are enclosed with insect screening shall be provided with guards where the walking surface is located more than 30 inches (762 mm) above the floor or grade below.

1015.6 Mechanical equipment, systems and devices. Guards shall be provided where various components that require service are located within 10 feet (3048 mm) of a roof edge or open side of a walking surface and such edge or open side is located more than 30 inches (762 mm) above the floor, roof or grade below. The guard shall extend not less than 30 inches (762 mm) beyond each end of such components. The guard shall be constructed so as to prevent the passage of a sphere 21 inches (533 mm) in diameter.

Exception: Guards are not required where personal fall arrest anchorage connector devices that comply with ANSI/ASSE Z 359.1 are installed.

1015.7 Roof access. Guards shall be provided where the roof hatch opening is located within 10 feet (3048 mm) of a roof edge or open side of a walking surface and such edge or open side is located more than 30 inches (762 mm) above the floor, roof or grade below. The guard shall extend not less than 30 inches (762 mm) beyond each end of the hatch parallel to the roof edge. The guard shall be constructed so as to prevent the passage of a sphere 21 inches (533 mm) in diameter.

Exception: Guards are not required where personal fall arrest anchorage connector devices that comply with ANSI/ASSE Z 359.1 are installed.

1015.8 Window openings. Windows in Group *R-1*, R-2 and R-3 buildings including dwelling units, where the bottom of the clear opening of an operable window is located less than 36 inches (914 mm) above the finished floor and more than 72 inches (1829 mm) above the finished grade or other surface below on the exterior of the building, shall comply with one of the following:

1. Where the bottom of the clear opening of the window is located more than 72 inches (1829 mm) and less than 75 feet (22 860 mm) above the finished grade or other surface below on the exterior of the building, the window shall comply with one of the following:
    1.1. Operable windows where the openings will not allow a 4-inch-diameter (102 mm) sphere to pass through the opening when the window is in its largest opened position, provided that the opening is not required for emergency escape or rescue.
    1.2. Operable windows where the openings are provided with window fall prevention devices that comply with ASTM F2090.
    1.3. Operable windows where the openings are provided with window opening control devices that comply with ASTM F2090. The window opening control device, after operation to release the control device allowing the window to fully open, shall not reduce the minimum net clear opening area of the window unit to less than the area required by Section 1031.3.1 for emergency escape and rescue openings.
2. Where the bottom of the clear opening of the window is located 75 feet (22,860 mm) or more above the finished grade or other surface below on the exterior of the building, the window shall comply with one of the following:
    2.1. Operable windows where the openings are provided with window fall prevention devices that comply with ASTM F2090.
    2.2. Operable windows where the openings will not allow a 4-inch-diameter (102 mm) sphere to pass through the opening when the window is in its largest opened position.
    2.3. Window fall prevention devices that comply with ASTM F2006.

SECTION 1016—EXIT ACCESS

1016.1 General. The exit access shall comply with the applicable provisions of Sections 1003 through 1015. Exit access arrangement shall comply with Sections 1016 through 1021.

1016.2 Egress through intervening spaces. Egress through intervening spaces shall comply with this section.

1. Exit access through an enclosed elevator lobby is permitted *in other than a Group I-2*. Where access to two or more exits or exit access doorways is required in Section 1006.2.1, access to not less than one of the required exits shall be provided without travel through the enclosed elevator lobbies required by Section 3006. Where the path of exit access travel passes through an enclosed elevator lobby, the level of protection required for the enclosed elevator lobby is not required to be extended to the exit unless direct access to an exit is required by other sections of this code.
2. In other than Group H occupancies, egress from a room or space is allowed to pass through adjoining or intervening rooms or areas provided that such adjoining rooms or areas and the area served are accessory to one or the other and provide a discernible path of egress travel to an exit.
3. In Group H occupancies, egress from a room or space is allowed to pass through adjoining or intervening rooms or areas provided that such adjoining rooms or areas are the same or lesser hazard occupancy group and provide a discernible path of egress travel to an exit.
4. An exit access shall not pass through a room that can be locked to prevent egress.

    Exception: An electrically locked exit access door providing egress from an elevator lobby shall be permitted in accordance with Section 1010.2.14.
5. Means of egress from dwelling units or sleeping areas shall not lead through other sleeping areas, toilet rooms or bathrooms.
6. Egress shall not pass through kitchens, storage rooms, closets or spaces used for similar purposes.

    Exceptions:
    1. Means of egress are not prohibited through a kitchen area serving adjoining rooms constituting part of the same dwelling unit or sleeping unit.
    2. Means of egress are not prohibited through stockrooms in Group M occupancies where all of the following are met:
        2.1. The stock is of the same hazard classification as that found in the main retail area.
        2.2. Not more than 50 percent of the exit access is through the stockroom.
        2.3. The stockroom is not subject to locking from the egress side.
        2.4. There is a demarcated, minimum 44-inch-wide (1118 mm) aisle defined by full- or partial-height fixed walls or similar construction that will maintain the required width and lead directly from the retail area to the exit without obstructions.
7. *The means of egress shall not pass through any room subject to locking except in Group I-3 occupancies classified as detention facilities and psychiatric treatment areas in Group I-2 occupancies.*

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1016.2.1 Multiple tenants. Where more than one tenant occupies any one floor of a building or structure, each tenant space, dwelling unit and sleeping unit shall be provided with access to the required exits without passing through adjacent tenant spaces, dwelling units and sleeping units.

Exception: The means of egress from a smaller tenant space shall not be prohibited from passing through a larger adjoining tenant space where such rooms or spaces of the smaller tenant occupy less than 10 percent of the area of the larger tenant space through which they pass; are the same or similar occupancy group; a discernible path of egress travel to an exit is provided; and the means of egress into the adjoining space is not subject to locking from the egress side. A required means of egress serving the larger tenant space shall not pass through the smaller tenant space or spaces.

1016.2.2 Basement exits in Group I-2 occupancies. *For additional requirements for occupancies in Group I-2, see Section 407.*

SECTION 1017—EXIT ACCESS TRAVEL DISTANCE

1017.1 General. Travel distance within the exit access portion of the means of egress system shall be in accordance with this section.

1017.2 Limitations. Exit access travel distance shall not exceed the values given in Table 1017.2.

TABLE 1017.2—EXIT ACCESS TRAVEL DISTANCE[a]

OCCUPANCY	WITHOUT AUTOMATIC SPRINKLER SYSTEM (feet)	WITH AUTOMATIC SPRINKLER SYSTEM (feet)
A, E, F-1, M, R, S-1	200[e]	250[b]
R-2.1	Not Permitted	250[b]
B	200	300[c]
F-2, S-2, U	300	400[c]
H-1	Not Permitted	75[d]
H-2	Not Permitted	100[d]
H-3	Not Permitted	150[d]
H-4	Not Permitted	175[d]
H-5	Not Permitted	200[c]
I-2, I-3[f]	Not Permitted	200[c]
I-4	150	200[c]
L	*Not Permitted*	*200[c]*

For SI: 1 foot = 304.8 mm.

a. See the following sections for modifications to exit access travel distance requirements:
Section 402.8: For the distance limitation in malls.
Section 407.4: For the distance limitation in Group I-2.
Section 408.3.10: For increased limitation in Group I-3.
Sections 408.6.1 and 408.8.1: For the distance limitations in Group I-3.
Section 411.2: For the distance limitation in special amusement areas.
Section 412.6: For the distance limitations in aircraft manufacturing facilities.
Section 422.3.4: For the distance limitation in ambulatory care facilities.
Section 1006.2.2.2: For the distance limitation in refrigeration machinery rooms.
Section 1006.2.2.3: For the distance limitation in refrigerated rooms and spaces.
Section 1006.3.4: For buildings with one exit.
Section 1017.2.2: For increased distance limitation in Groups F-1 and S-1.
Section 1017.2.3: For increased distance limitation in Group H-5.
Section 1030.7: For increased limitation in assembly seating.
Section 3103.4: For temporary structures.
Section 3104.9: For pedestrian walkways.

b. Buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2. See Section 903 for occupancies where automatic sprinkler systems are permitted in accordance with Section 903.3.1.2.

c. Buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.

d. Group H occupancies equipped throughout with an automatic sprinkler system in accordance with Section 903.2.5.1.

e. Group R-3 and R-4 buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.3. See Section 903.2.8 for occupancies where automatic sprinkler systems are permitted in accordance with Section 903.3.1.3.

f. Not permitted in nonsprinklered Group I-3 occupancies.

1017.2.1 Exterior egress balcony increase. Exit access travel distances specified in Table 1017.2 shall be increased up to an additional 100 feet (30 480 mm) provided that the last portion of the exit access leading to the exit occurs on an exterior egress balcony constructed in accordance with Section 1021. The length of such balcony shall be not less than the amount of the increase taken.

1017.2.2 Groups F-1 and S-1 increase. The maximum exit access travel distance shall be 400 feet (122 m) in Group F-1 or S-1 occupancies where all of the following conditions are met:

1. The portion of the building classified as Group F-1 or S-1 is limited to one story in height.
2. The minimum height from the finished floor to the bottom of the ceiling or roof slab or deck is 24 feet (7315 mm).

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3. The building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.

1017.2.3 Group H-5 increase. The maximum exit access travel distance shall be 300 feet (91 m) in the fabrication areas of Group H-5 occupancies where all of the following conditions are met:

1. The width of the fabrication area is 300 feet (91 m) or greater.
2. The area of the fabrication area is 220,000 square feet (18 600 m^2) or greater.
3. The height of the fabrication area, measured between the raised metal floor and the clean filter ceiling, is 16 feet (48 768 mm) or greater.
4. The supply ventilation rate is 20 cubic feet per minute per square foot (0.556 $m^3/min/m^2$) or greater and shall remain operational.

1017.3 Measurement. Exit access travel distance shall be measured from the most remote point of each room, area or space along the natural and unobstructed path of horizontal and vertical egress travel to the entrance to an exit. Where more than one exit is required, exit access travel distance shall be measured to the nearest exit.

Exceptions:

1. In open parking garages, exit access travel distance is permitted to be measured to the closest riser of an exit access stairway or the closest slope of an exit access ramp.
2. In smoke protected seating and open air assembly seating, exit access travel distance shall be measured in accordance with Section 1030.7.

1017.3.1 Exit access stairways and ramps. Travel distance on exit access stairways or ramps shall be included in the exit access travel distance measurement. The measurement along stairways shall be made on a plane parallel and tangent to the stair tread nosings in the center of the stair and landings. The measurement along ramps shall be made on the walking surface in the center of the ramp and landings.

1017.3.2 Atriums. Exit access travel distance for areas open to an atrium shall comply with the requirements of Sections 1017.3.2.1 through 1017.3.2.3.

1017.3.2.1 Egress not through the atrium. Where required access to the exits is not through the atrium, exit access travel distance shall comply with Section 1017.2.

1017.3.2.2 Exit access travel distance at the level of exit discharge. Where the path of egress travel is through an atrium space, exit access travel distance at the level of exit discharge shall be determined in accordance with Section 1017.2.

1017.3.2.3 Exit access travel distance at other than the level of exit discharge. Where the path of egress travel is not at the level of exit discharge from the atrium, that portion of the total permitted exit access travel distance that occurs within the atrium shall be not greater than 200 feet (60 960 mm).

SECTION 1018—AISLES

[DSA-AC] *In addition to the requirements of this section, means of egress, which provide access to, or egress from, buildings or facilities where accessibility is required for applications listed in Section 1.9.1 regulated by the Division of the State Architect—Access Compliance, shall also comply with Chapter 11A or Chapter 11B, Section 11B-403, as applicable.*

1018.1 General. Aisles and aisle accessways serving as a portion of the exit access in the means of egress system shall comply with the requirements of this section. Aisles or aisle accessways shall be provided from all occupied portions of the exit access that contain seats, tables, furnishings, displays and similar fixtures or equipment. The minimum width or required capacity of aisles shall be unobstructed.

Exception: Encroachments complying with Section 1005.7.

1018.2 Aisles in assembly spaces. Aisles and aisle accessways serving a room or space used for assembly purposes shall comply with Section 1030.

1018.3 Aisles in Groups B and M. In Group B and M occupancies, the minimum clear aisle width shall be determined by Section 1005.1 for the occupant load served, but shall be not less than that required for corridors by Section 1020.3.

Exception: Nonpublic aisles serving less than 50 people and not required to be accessible by Chapter *11B, (see Section 11B-403)* need not exceed 28 inches (711 mm) in width.

1018.4 Aisle accessways in Group M. An aisle accessway shall be provided on not less than one side of each element within the merchandise pad. The minimum clear width for an aisle accessway not required to be accessible shall be 30 inches (762 mm). The required clear width of the aisle accessway shall be measured perpendicular to the elements and merchandise within the merchandise pad. The 30-inch (762 mm) minimum clear width shall be maintained to provide a path to an adjacent aisle or aisle accessway. The common path of egress travel shall not exceed 30 feet (9144 mm) from any point in the merchandise pad.

Exception: For areas serving not more than 50 occupants, the common path of egress travel shall not exceed 75 feet (22 860 mm).

1018.5 Aisles in other than assembly spaces and Groups B and M. In other than rooms or spaces used for assembly purposes and Group B and M occupancies, the minimum clear aisle capacity shall be determined by Section 1005.1 for the occupant load served, but the width shall be not less than that required for corridors by Section 1020.3.

Exception: Nonpublic aisles serving less than 50 people and not required to be accessible by Chapter *11B, (see Section 11B-403)* need not exceed 28 inches (711 mm) in width.

SECTION 1019—EXIT ACCESS STAIRWAYS AND RAMPS

1019.1 General. Exit access stairways and ramps serving as an exit access component in a means of egress system shall comply with the requirements of this section. The number of stories connected by exit access stairways and ramps shall include basements, but not mezzanines.

1019.2 All occupancies. Exit access stairways and ramps that serve floor levels within a single story are not required to be enclosed.

1019.3 Occupancies other than Groups I-2 and I-3 *and R-2.1*. In other than Group I-2, I-3 *and R-2.1* occupancies, floor openings containing exit access stairways or ramps shall be enclosed with a shaft enclosure constructed in accordance with Section 713.

Exceptions:

1. Exit access stairways and ramps within a two-story opening complying with Section 712.1.9.
2. In Group R-1, R-2, *R-2.1,* R-3 *or R-3.1* occupancies, exit access stairways and ramps connecting four stories or less serving and contained within an individual dwelling unit or sleeping unit or live/work unit.
3. Exit access stairways serving and contained within a Group R-3 congregate residence or a Group R-4 facility are not required to be enclosed.
4. Exit access stairways and ramps in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1, where the area of the vertical opening between stories does not exceed twice the horizontal projected area of the stairway or ramp and the opening is protected by a draft curtain and closely spaced sprinklers in accordance with NFPA 13. In other than Group B and M occupancies, this provision is limited to openings that do not connect more than four stories.
5. Exit access stairways and ramps within an atrium complying with the provisions of Section 404.
6. Exit access stairways and ramps in open parking garages that serve only the parking garage.
7. Exit access stairways and ramps serving smoke-protected or open-air assembly seating complying with the exit access travel distance requirements of Section 1030.7.
8. Exit access stairways and ramps between the balcony, gallery or press box and the main assembly floor in occupancies such as theaters, places of religious worship, auditoriums and sports facilities.
9. Exterior exit access stairways or ramps between occupiable roofs.
10. *Fixed-guideway transit stations, constructed in accordance with Section 443.*

1019.4 Group I-2, I-3 *and R-2.1* occupancies. In Group I-2, I-3 *and R-2.1* occupancies, floor openings between stories containing exit access stairways or ramps are required to be enclosed with a shaft enclosure constructed in accordance with Section 713.

Exception: In Group I-3 occupancies, exit access stairways or ramps constructed in accordance with Section 408 are not required to be enclosed.

SECTION 1020—CORRIDORS

1020.1 General. Corridors serving as an exit access component in a means of egress system shall comply with the requirements of Sections 1020.2 through 1020.7.

1020.2 Construction. Corridors shall be fire-resistance rated in accordance with Table 1020.2. The corridor walls required to be fire-resistance rated shall comply with Section 708 for fire partitions.

Exceptions:

1. A fire-resistance rating is not required for corridors in an occupancy in Group E where each room that is used for instruction has not less than one door opening directly to the exterior and rooms for assembly purposes have not less than one-half of the required means of egress doors opening directly to the exterior. Exterior doors specified in this exception are required to be at ground level.
2. A fire-resistance rating is not required for corridors contained within a dwelling unit or sleeping unit in an occupancy in Group R.
3. A fire-resistance rating is not required for corridors in open parking garages.
4. A fire-resistance rating is not required for corridors in an occupancy in Group B that is a space requiring only a single means of egress complying with Section 1006.2.
5. Corridors adjacent to the exterior walls of buildings shall be permitted to have unprotected openings on unrated exterior walls where unrated walls are permitted by Table 705.5 and unprotected openings are permitted by Table 705.9.
6. *A fire-resistance rating is not required for corridors within suites in a Group I-2 constructed in accordance with Section 407.4.4 or 407.4.5.*
7. *A fire-resistance rating is not required for corridors within Group I-3 occupancies that comply with intervening spaces, see Section 408.1.2.2.*

TABLE 1020.2—CORRIDOR FIRE-RESISTANCE RATING			
OCCUPANCY	OCCUPANT LOAD SERVED BY CORRIDOR	REQUIRED FIRE-RESISTANCE RATING (hours)	
		Without automatic sprinkler system	With automatic sprinkler system
H-1, H-2, H-3	All	Not Permitted	1[c]
H-4, H-5, *L*	Greater than 30	Not Permitted	1[c]
A[e], B, E, F, M, S, U	Greater than 30	1	0
R-*1, R-2, R-2.2, R-3*[d]*, R-3.1, R-4*[d]	Greater than 10	Not Permitted	*1*
I-2[a]	*Greater than 6*	Not Permitted	*1*
I-3, *R-2.1*	*Greater than 6*	Not Permitted	1[b, c]
I-4	All	1	*1*

a. For requirements for occupancies in Group I-2, see Sections 407.2 and 407.3.
b. For a reduction in the fire-resistance rating for occupancies in Group I-3, see Section 408.8.
c. Buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2 where allowed.
d. Group R-3 and R-4 buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.3. See Section 903.2.8 for occupancies where automatic sprinkler systems are permitted in accordance with Section 903.3.1.3.
e. ***[SFM]*** *See Section 1029.*

1020.2.1 Hoistway protection. Elevator hoistway doors in elevators hoistway enclosures required to be fire-resistance rated shall be protected in accordance with Section 716. Elevator hoistway doors shall also be protected in accordance with Section 3006.2.

1020.3 Width and capacity. The required capacity of corridors shall be determined as specified in Section 1005.1, but the minimum width shall be not less than that specified in Table 1020.3.

Exception: In Group I-2 occupancies, corridors are not required to have a clear width of 96 inches (2438 mm) in areas where there will not be stretcher or bed movement for access to care or as part of the defend-in-place strategy.

TABLE 1020.3—MINIMUM CORRIDOR WIDTH	
OCCUPANCY	MINIMUM WIDTH (inches)
Any facility not listed in this table	44
Access to and utilization of mechanical, plumbing or electrical systems or equipment	24
With an occupant load of less than 50	36
Within a dwelling unit	36
In Group E with a corridor having an occupant load of 100 or more	72
In corridors and areas serving stretcher traffic in ambulatory care facilities	72
Group I-2 *and I-3* in areas where required for bed movement	96
Corridors in Group I-2 and I-3 occupancies serving any area caring for one or more nonambulatory persons.[a]	*72*

For SI: 1 inch = 25.4 mm.
a. See Section 1224.4.7.1 for Group I-2.

1020.4 Obstruction. The minimum width or required capacity of corridors shall be unobstructed.

Exception: Encroachments complying with Section 1005.7.

1020.5 Dead ends. Where more than one exit or exit access doorway is required, the exit access shall be arranged such that dead-end corridors do not exceed 20 feet (6096 mm) in length.

Exceptions:

1. In Group I-3, Condition 2, 3 or 4, occupancies, the dead end in a corridor shall not exceed 50 feet (15 240 mm).
2. In occupancies in Groups B, E, F, M, R-1, R-2, *R-2.1, R-2.2,* S and U, where the building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1, the length of the dead-end corridors shall not exceed 50 feet (15 240 mm).
3. A dead-end corridor shall not be limited in length where the length of the dead-end corridor is less than 2.5 times the least width of the dead-end corridor.
4. In Group I-2 occupancies, *where the building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1,* the length of dead-end corridors that do not serve patient rooms or patient treatment spaces shall not exceed 30 feet (9144 mm).

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1020.6 Air movement in corridors. Corridors shall not serve as supply, return, exhaust, relief or ventilation air ducts.

Exceptions:

1. Use of a corridor as a source of makeup air for exhaust systems in rooms that open directly onto such corridors, including toilet rooms, bathrooms, dressing rooms, smoking lounges and janitor closets, shall be permitted, provided that each such corridor is directly supplied with outdoor air at a rate greater than the rate of makeup air taken from the corridor.
2. Where located within a dwelling unit, the use of corridors for conveying return air shall not be prohibited.
3. Where located within tenant spaces of 1,000 square feet (93 m^2) or less in area, utilization of corridors for conveying return air is permitted.
4. Transfer air movement required to maintain the pressurization difference within health care facilities *and Group L occupancies* in accordance with ASHRAE 170.
5. *For health care facilities under the jurisdiction of the Office of Statewide Hospital Planning and Development (OSHPD), see the California Mechanical Code.*

1020.6.1 Corridor ceiling. Use of the space between the corridor ceiling and the floor or roof structure above as a return air plenum is permitted for one or more of the following conditions:

1. The corridor is not required to be of fire-resistance-rated construction.
2. The corridor is separated from the plenum by fire-resistance-rated construction.
3. The air-handling system serving the corridor is shut down upon activation of the air-handling unit smoke detectors required by the *California Mechanical Code*.
4. The air-handling system serving the corridor is shut down upon detection of sprinkler water flow where the building is equipped throughout with an automatic sprinkler system.
5. The space between the corridor ceiling and the floor or roof structure above the corridor is used as a component of an approved engineered smoke control system.

1020.7 Corridor continuity. Fire-resistance-rated corridors shall be continuous from the point of entry to an exit, and shall not be interrupted by intervening rooms. Where the path of egress travel within a fire-resistance-rated corridor to the exit includes travel along unenclosed exit access stairways or ramps, the fire-resistance rating shall be continuous for the length of the stairway or ramp and for the length of the connecting corridor on the adjacent floor leading to the exit.

Exceptions:

1. Foyers, lobbies or reception rooms constructed as required for corridors shall not be construed as intervening rooms.
2. Enclosed elevator lobbies as permitted by Item 1 of Section 1016.2 shall not be construed as intervening rooms.
3. ***[SFM]*** *In fully sprinklered office buildings, corridors may lead through enclosed elevator lobbies if all areas of the building have access to at least one required exit without passing through the elevator lobby.*

SECTION 1021—EGRESS BALCONIES

1021.1 General. Balconies used for egress purposes shall conform to the same requirements as corridors for minimum width, required capacity, headroom, dead ends and projections.

1021.2 Wall separation. Exterior egress balconies shall be separated from the interior of the building by walls and opening protectives as required for corridors.

Exception: Separation is not required where the exterior egress balcony is served by not less than two stairways and a dead-end travel condition does not require travel past an unprotected opening to reach a stairway.

1021.3 Openness. The long side of an egress balcony shall be not less than 50 percent open, and the open area above the guards shall be so distributed as to minimize the accumulation of smoke or toxic gases.

1021.4 Location. Exterior egress balconies shall have a minimum fire separation distance of 10 feet (3048 mm) measured at right angles from the exterior edge of the egress balcony to the following:

1. Adjacent lot lines.
2. Other portions of the building.
3. Other buildings on the same lot unless the adjacent building exterior walls and openings are protected in accordance with Section 705 based on fire separation distance.

For the purposes of this section, other portions of the building shall be treated as separate buildings.

SECTION 1022—EXITS

1022.1 General. Exits shall comply with Sections 1022 through 1027 and the applicable requirements of Sections 1003 through 1015. An exit shall not be used for any purpose that interferes with its function as a means of egress. Once a given level of exit protection is achieved, such level of protection shall not be reduced until arrival at the exit discharge. Exits shall be continuous from the point of entry into the exit to the exit discharge.

1022.2 Exterior exit doors. Buildings or structures used for human occupancy shall have not less than one exterior door that meets the requirements of Section 1010.1.1.

1022.2.1 Detailed requirements. Exterior exit doors shall comply with the applicable requirements of Section 1010.1.

1022.2.2 Arrangement. Exterior exit doors shall lead directly to the exit discharge or the public way.

1022.3 Basement exits in Group I-2 occupancies. *For additional requirements for occupancies in Group I-2, see Section 407.4.1.2.*

SECTION 1023—INTERIOR EXIT STAIRWAYS AND RAMPS

1023.1 General. Interior exit stairways and ramps serving as an exit component in a means of egress system shall comply with the requirements of this section. Interior exit stairways and ramps shall be enclosed and lead directly to the exterior of the building or shall be extended to the exterior of the building with an exit passageway conforming to the requirements of Section 1024, except as permitted in Section 1028.2. An interior exit stairway or ramp shall not be used for any purpose other than as a means of egress and a circulation path.

1023.2 Construction. Enclosures for interior exit stairways and ramps shall be constructed as fire barriers in accordance with Section 707 or horizontal assemblies constructed in accordance with Section 711, or both. Interior exit stairway and ramp enclosures shall have a fire-resistance rating of not less than 2 hours where connecting four stories or more and not less than 1 hour where connecting less than four stories. The number of stories connected by the interior exit stairways or ramps shall include any basements, but not any mezzanines. Enclosures for interior exit stairways and ramps shall have a fire-resistance rating not less than the floor assembly penetrated, but need not exceed 2 hours.

Exceptions:

1. Interior exit stairways and ramps in Group I-3 occupancies in accordance with the provisions of Section 408.3.8 *of the California Building Code.*
2. Interior exit stairways within an atrium enclosed in accordance with Section 404.6 *of the California Building Code*.
3. Interior exit stairways in accordance with Section 510.2.
4. *Fixed guideway transit stations, constructed in accordance with Section 443.*

1023.3 Termination. Interior exit stairways and ramps shall terminate at an exit discharge or a public way.

Exception: A combination of interior exit stairways, interior exit ramps and exit passageways, constructed in accordance with Sections 1023.2, 1023.3.1 and 1024, respectively, and forming a continuous protected enclosure, shall be permitted to extend an interior exit stairway or ramp to the exit discharge or a public way.

1023.3.1 Extension. Where interior exit stairways and ramps are extended to an exit discharge or a public way by an exit passageway, the interior exit stairway and ramp shall be separated from the exit passageway by a fire barrier constructed in accordance with Section 707 or a horizontal assembly constructed in accordance with Section 711, or both. The fire-resistance rating shall be not less than that required for the interior exit stairway and ramp. A fire door assembly complying with Section 716 shall be installed in the fire barrier to provide a means of egress from the interior exit stairway and ramp to the exit passageway. Openings in the fire barrier other than the fire door assembly are prohibited. Penetrations of the fire barrier are prohibited.

Exceptions:

1. Penetrations of the fire barrier in accordance with Section 1023.5 shall be permitted.
2. Separation between an interior exit stairway or ramp and the exit passageway extension shall not be required where there are no openings into the exit passageway extension.
3. Separation between an interior exit stairway or ramp and the exit passageway extension shall not be required where the interior exit stairway and the exit passageway extension are pressurized in accordance with Section 909.20.4.

1023.4 Openings. Interior exit stairway and ramp opening protectives shall be in accordance with the requirements of Section 716.

Openings in interior exit stairways and ramps other than unprotected exterior openings shall be limited to those required for exit access to the enclosure from normally occupied spaces and for egress from the enclosure.

Elevators shall not open into interior exit stairways and ramps.

1023.5 Penetrations. Penetrations into or through interior exit stairways and ramps are prohibited except for the following:

1. Equipment and ductwork necessary for independent ventilation or pressurization.
2. Fire protection systems.
3. Security systems.
4. Two-way communication systems.
5. Electrical raceway for fire department communication systems.
6. Electrical raceway serving the interior exit stairway and ramp and terminating at a steel box not exceeding 16 square inches (0.010 m^2).
7. Structural elements, such as beams or joists, supporting the interior exit stairway or ramp or enclosure.
8. Structural elements, such as beams or joists, supporting a roof at the top of the interior exit stairway or ramp.

Such penetrations shall be protected in accordance with Section 714. There shall not be penetrations or communication openings, whether protected or not, between adjacent interior exit stairways and ramps.

Exception: Membrane penetrations shall be permitted on the outside of the interior exit stairway and ramp. Such penetrations shall be protected in accordance with Section 714.4.2.

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1023.6 Ventilation. Equipment and ductwork for interior exit stairway and ramp ventilation as permitted by Section 1023.5 shall comply with one of the following items:

1. Such equipment and ductwork shall be located exterior to the building and shall be directly connected to the interior exit stairway and ramp by ductwork enclosed in construction as required for shafts.
2. Where such equipment and ductwork is located within the interior exit stairway and ramp, the intake air shall be taken directly from the outdoors and the exhaust air shall be discharged directly to the outdoors, or such air shall be conveyed through ducts enclosed in construction as required for shafts.
3. Where located within the building, such equipment and ductwork shall be separated from the remainder of the building, including other mechanical equipment, with construction as required for shafts.

In each case, openings into the fire-resistance-rated construction shall be limited to those needed for maintenance and operation and shall be protected by opening protectives in accordance with Section 716 for shaft enclosures.

The interior exit stairway and ramp ventilation systems shall be independent of other building ventilation systems.

1023.7 Interior exit stairway and ramp exterior walls. Exterior walls of the interior exit stairway or ramp shall comply with the requirements of Section 705 for exterior walls. Where nonrated walls or unprotected openings enclose the exterior of the stairway or ramps and the walls or openings are exposed by other parts of the building at an angle of less than 180 degrees (3.14 rad), building construction within 10 feet (3048 mm) of the exterior walls of the interior exit stairway or ramp shall comply with Sections 1023.7.1 and 1023.7.2.

1023.7.1 Building exterior walls. Building exterior walls within 10 feet (3048 mm) horizontally of a nonrated wall or unprotected opening in an interior exit stairway or ramp shall have a fire-resistance rating of not less than 1 hour. Openings within such exterior walls shall be protected by opening protectives having a fire protection rating of not less than $^3/_4$ hour. This construction shall extend vertically from the ground to a point 10 feet (3048 mm) above the topmost landing of the stairway or ramp, or to the roof line, whichever is lower.

1023.7.2 Roof assemblies. Where the interior exit stairway or ramp extends above an adjacent roof of the same building, the adjacent roof assembly shall have a fire-resistance rating of not less than 1 hour and openings shall be protected by opening protectives having a fire protection rating of not less than $^3/_4$ hour. The fire-resistance rating and opening protection shall extend horizontally not less than 10 feet (3048 mm) from the exterior wall of the stairway or ramp, or to the perimeter of the adjacent roof, whichever is less.

Exceptions:

1. The roof assembly need not be rated and openings in the roof need not be protected where they are adjacent to the penthouse of the stairway or ramp, unless otherwise required by this code.
2. The adjacent roof assembly need not be rated and adjacent openings in the roof need not be protected where the exterior wall of the stairway or ramp has a fire-resistance rating of 1 hour and openings are protected by opening protectives having a fire protection rating of not less than $^3/_4$ hour, extending not less than 10 feet (3048 mm) above the roof.

1023.8 Barrier at level of exit discharge. An interior exit stairway and ramp shall not continue below its level of exit discharge unless an approved barrier is provided at the level of exit discharge to prevent persons from unintentionally continuing into levels below. Directional exit signs shall be provided as specified in Section 1013.

1023.9 Stairway identification signs. A sign shall be provided at each floor landing in an interior exit stairway and ramp connecting more than three stories designating the floor level, the terminus of the top and bottom of the interior exit stairway and ramp and the identification of the stairway or ramp. The signage shall state the story of and direction to the exit discharge, and the availability of roof access from the interior exit stairway and ramp for the fire department. The bottom of the sign shall be located not less than 5 feet (1524 mm) above the floor landing in a position that is readily visible when the doors are in the open and closed positions.

In addition to the stairway identification sign, raised characters and braille floor identification signs that comply with Chapter 11A, Section 1143A or Chapter 11B shall be located at the landing of each floor level, placed adjacent to the door on the latch side, in all enclosed stairways in buildings two or more stories in height to identify the floor level. At the exit discharge level, the sign shall include a raised five pointed star located to the left of the identifying floor level. The outside diameter of the star shall be the same as the height of the raised characters.

1023.9.1 Signage requirements. Stairway identification signs shall comply with all of the following requirements:

1. The signs shall be a minimum size of 18 inches (457 mm) by 12 inches (305 mm).
2. The letters designating the identification of the interior exit stairway and ramp *such as STAIR NO. 1 or WEST STAIR, shall be placed at the top of the sign and shall be not less than $1^1/_2$ inches (38 mm) in height block lettering with $^1/_4$-inch (6 mm) strokes.*
3. The number designating the floor level shall be not less than 5 inches (127 mm) in height *with $^3/_4$-inch (19 mm) strokes* and located in the center of the sign. *The mezzanine levels shall have the letter "M" preceding the floor level. Basement levels shall have the letter "B" preceding the floor number.*
4. Other lettering and numbers shall be not less than 1 inch (25 mm) in height.
5. *The stairway's upper terminus, such as ROOF ACCESS or NO ROOF ACCESS, shall be placed under the stairway identification in 1-inch-high (25 mm) block lettering with $^1/_4$-inch (6 mm) strokes.*

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6. *The lower and upper terminus of the stairway shall be placed at the bottom of the sign in 1-inch-high (25 mm) block lettering with $^{1}/_{4}$-inch (6 mm) strokes.*
7. Characters and their background shall have a nonglare finish. Characters shall contrast with their background, with either light characters on a dark background or dark characters on a light background.
8. Where signs required by Section 1023.9 are installed in the interior exit stairways and ramps of buildings subject to Section 1025, the signs shall be made of the same materials as required by Section 1025.4.

1023.10 Elevator lobby identification signs. At landings in interior exit stairways where two or more doors lead to the floor level, any door with direct access to an enclosed elevator lobby shall be identified by signage located on the door or directly adjacent to the door stating "Elevator Lobby." Signage shall be in accordance with Section 1023.9.1, Items 4, 5 and 6.

1023.11 Tactile floor-level signs. Where floor level signs are provided in interior exit stairways and ramps, a floor-level sign identifying the floor level in visual characters, raised characters and braille complying with *Chapter 11A, Section 1143A* shall be located at each floor-level landing adjacent to the door leading from the interior exit stairway and ramp into the corridor.

1023.12 Smokeproof enclosures. Where required by Section 403.5.4, 405.7.2 or 412.2.2.1, interior exit stairways and ramps shall be smokeproof enclosures in accordance with Section 909.20.

1023.12.1 Termination and extension. A smokeproof enclosure shall terminate at an exit discharge or a public way. The smokeproof enclosure shall be permitted to be extended by an exit passageway in accordance with Section 1023.3. The exit passageway shall be without openings other than the fire door assembly required by Section 1023.3.1 and those necessary for egress from the exit passageway. The exit passageway shall be separated from the remainder of the building by 2-hour fire barriers constructed in accordance with Section 707 or horizontal assemblies constructed in accordance with Section 711, or both.

Exceptions:

1. Openings in the exit passageway serving a smokeproof enclosure are permitted where the exit passageway is protected and pressurized in the same manner as the smokeproof enclosure, and openings are protected as required for access from other floors.
2. The fire barrier separating the smokeproof enclosure from the exit passageway is not required, provided that the exit passageway is protected and pressurized in the same manner as the smokeproof enclosure.
3. A smokeproof enclosure shall be permitted to egress through areas on the level of exit discharge or vestibules as permitted by Section 1028.

1023.12.2 Enclosure access. Access to the stairway or ramp within a smokeproof enclosure shall be by way of a vestibule or an open exterior balcony.

1023.13 Standpipes. Standpipes and standpipe hose connections shall be provided where required by Sections 905.3 and 905.4.

SECTION 1024—EXIT PASSAGEWAYS

1024.1 General. Exit passageways serving as an exit component in a means of egress system shall comply with the requirements of this section. An exit passageway shall not be used for any purpose other than as a means of egress and a circulation path.

1024.2 Width and capacity. The required capacity of exit passageways shall be determined as specified in Section 1005.1 but the minimum width shall be not less than 44 inches (1118 mm), except that exit passageways serving an occupant load of less than 50 shall be not less than 36 inches (914 mm) in width. The minimum width or required capacity of exit passageways shall be unobstructed.

Exception: Encroachments complying with Section 1005.7.

The clear width of exit passageways in a Group I-2 occupancy used for the movement of beds and litters shall be 44-inch (1118) minimum.

1024.3 Construction. Exit passageway enclosures shall have walls, floors and ceilings of not less than a 1-hour fire-resistance rating, and not less than that required for any connecting interior exit stairway or ramp. Exit passageways shall be constructed as fire barriers in accordance with Section 707 or horizontal assemblies constructed in accordance with Section 711, or both.

1024.4 Termination. Exit passageways on the level of exit discharge shall terminate at an exit discharge. Exit passageways on other levels shall terminate at an exit.

1024.5 Openings. Exit passageway opening protectives shall be in accordance with the requirements of Section 716.

Except as permitted in Section 402.8.7, openings in exit passageways other than unprotected exterior openings shall be limited to those necessary for exit access to the exit passageway from normally occupied spaces and for egress from the exit passageway.

Where an interior exit stairway or ramp is extended to an exit discharge or a public way by an exit passageway, the exit passageway shall comply with Section 1023.3.1.

Elevators shall not open into an exit passageway.

1024.6 Penetrations. Penetrations into or through an exit passageway are prohibited except for the following:

1. Equipment and ductwork necessary for independent ventilation or pressurization.
2. Fire protection systems.
3. Security systems.

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4. Two-way communication systems.
5. Electrical raceway for fire department communication.
6. Electrical raceway serving the exit passageway and terminating at a steel box not exceeding 16 square inches (0.010 m^2).
7. Structural elements, such as beams or joists, supporting a floor or roof at the top of the exit passageway.

Such penetrations shall be protected in accordance with Section 714. There shall not be penetrations or communicating openings, whether protected or not, between adjacent exit passageways.

Exception: Membrane penetrations shall be permitted on the outside of the exit passageway. Such penetrations shall be protected in accordance with Section 714.4.2.

1024.7 Ventilation. Equipment and ductwork for exit passageway ventilation as permitted by Section 1024.6 shall comply with one of the following:

1. The equipment and ductwork shall be located exterior to the building and shall be directly connected to the exit passageway by ductwork enclosed in construction as required for shafts.
2. Where the equipment and ductwork is located within the exit passageway, the intake air shall be taken directly from the outdoors and the exhaust air shall be discharged directly to the outdoors, or the air shall be conveyed through ducts enclosed in construction as required for shafts.
3. Where located within the building, the equipment and ductwork shall be separated from the remainder of the building, including other mechanical equipment, with construction as required for shafts.

In each case, openings into the fire-resistance-rated construction shall be limited to those needed for maintenance and operation and shall be protected by opening protectives in accordance with Section 716 for shaft enclosures.

Exit passageway ventilation systems shall be independent of other building ventilation systems.

1024.8 Exit passageway exterior walls. Exterior walls of the exit passageway shall comply with Section 705. Where nonrated walls or unprotected openings enclose the exterior of the exit passageway and the walls or openings are exposed by other parts of the building at an angle of less than 180 degrees (3.14 rad), the building exterior walls within 10 feet (3048 mm) horizontally of a nonrated wall or unprotected opening shall have a fire-resistance rating of not less than 1 hour. Openings within such exterior walls shall be protected by opening protectives having a fire protection rating of not less than $^3/_4$ hour. This construction shall extend vertically from the ground to a point 10 feet (3048 mm) above the floor of the exit passageway, or to the roof line, whichever is lower.

1024.9 Standpipes. Standpipes and standpipe hose connections shall be provided where required by Sections 905.3 and 905.4.

SECTION 1025—LUMINOUS EGRESS PATH MARKINGS

1025.1 General. Approved luminous egress path markings delineating the exit path shall be provided in high-rise buildings of Group A, B, E, M or R-1 occupancies in accordance with this section.

Exception: Luminous egress path markings shall not be required on the level of exit discharge in lobbies that serve as part of the exit path in accordance with Section 1028.2, Exception 1.

1025.2 Markings within exit components. Egress path markings shall be provided in interior exit stairways, interior exit ramps and exit passageways, in accordance with Sections 1025.2.1 through 1025.2.6.3.

1025.2.1 Steps. A solid and continuous stripe shall be applied to the horizontal leading edge of each step and shall extend for the full length of the step. Outlining stripes shall have a minimum horizontal width of 1 inch (25 mm) and a maximum width of 2 inches (51 mm). The leading edge of the stripe shall be placed not more than $^1/_2$ inch (12.7 mm) from the leading edge of the step and the stripe shall not overlap the leading edge of the step by not more than $^1/_2$ inch (12.7 mm) down the vertical face of the step.

Exception: The minimum width of 1 inch (25 mm) shall not apply to outlining stripes listed in accordance with UL 1994.

1025.2.2 Landings. The leading edge of landings shall be marked with a stripe consistent with the dimensional requirements for steps.

1025.2.3 Handrails. Handrails and handrail extensions shall be marked with a solid and continuous stripe having a minimum width of 1 inch (25 mm). The stripe shall be placed on the top surface of the handrail for the entire length of the handrail, including extensions and newel post caps. Where handrails or handrail extensions bend or turn corners, the stripe shall not have a gap of more than 4 inches (102 mm).

Exception: The minimum width of 1 inch (25 mm) shall not apply to outlining stripes listed in accordance with UL 1994.

1025.2.4 Perimeter demarcation lines. Stair landings and other floor areas within interior exit stairways, interior exit ramps and exit passageways, with the exception of the sides of steps, shall be provided with solid and continuous demarcation lines on the floor or on the walls or a combination of both. The stripes shall be 1 to 2 inches (25 mm to 51 mm) wide with interruptions not exceeding 4 inches (102 mm).

Exception: The minimum width of 1 inch (25 mm) shall not apply to outlining stripes listed in accordance with UL 1994.

1025.2.4.1 Floor-mounted demarcation lines. Perimeter demarcation lines shall be placed within 4 inches (102 mm) of the wall and shall extend to within 2 inches (51 mm) of the markings on the leading edge of landings. The demarcation lines shall continue across the floor in front of all doors.

Exception: Demarcation lines shall not extend in front of exit discharge doors that lead out of an exit and through which occupants must travel to complete the exit path.

1025.2.4.2 Wall-mounted demarcation lines. Perimeter demarcation lines shall be placed on the wall with the bottom edge of the stripe not more than 4 inches (102 mm) above the finished floor. At the top or bottom of the stairs, demarcation lines shall drop vertically to the floor within 2 inches (51 mm) of the step or landing edge. Demarcation lines on walls shall transition vertically to the floor and then extend across the floor where a line on the floor is the only practical method of outlining the path. Where the wall line is broken by a door, demarcation lines on walls shall continue across the face of the door or transition to the floor and extend across the floor in front of such door.

Exception: Demarcation lines shall not extend in front of exit discharge doors that lead out of an exit and through which occupants must travel to complete the exit path.

1025.2.4.3 Transition. Where a wall-mounted demarcation line transitions to a floor-mounted demarcation line, or vice versa, the wall-mounted demarcation line shall drop vertically to the floor to meet a complimentary extension of the floor-mounted demarcation line, thus forming a continuous marking.

1025.2.5 Obstacles. Obstacles at or below 6 feet 6 inches (1981 mm) in height and projecting more than 4 inches (102 mm) into the egress path shall be outlined with markings not less than 1 inch (25 mm) in width comprised of a pattern of alternating equal bands, of luminous material and black, with the alternating bands not more than 2 inches (51 mm) thick and angled at 45 degrees (0.79 rad). Obstacles shall include, but are not limited to, standpipes, hose cabinets, wall projections and restricted height areas. However, such markings shall not conceal any required information or indicators including but not limited to instructions to occupants for the use of standpipes.

Exception: The minimum width of 1 inch (25 mm) shall not apply to markings listed in accordance with UL 1994.

1025.2.6 Doors within the exit path. Doors through which occupants must pass in order to complete the exit path shall be provided with markings complying with Sections 1025.2.6.1 through 1025.2.6.3.

1025.2.6.1 Emergency exit symbol. The doors shall be identified by a low-location luminous emergency exit symbol complying with NFPA 170. The exit symbol shall be not less than 4 inches (102 mm) in height and shall be mounted on the door, centered horizontally, with the top of the symbol not higher than 18 inches (457 mm) above the finished floor.

1025.2.6.2 Door hardware markings. Door hardware shall be marked with not less than 16 square inches (10 323 mm^2) of luminous material. This marking shall be located behind, immediately adjacent to, or on the door handle or escutcheon. Where a panic bar is installed, such material shall be not less than 1 inch (25 mm) wide for the entire length of the actuating bar or touchpad.

1025.2.6.3 Door frame markings. The top and sides of the door frame shall be marked with a solid and continuous 1-inch- to 2-inch-wide (25 mm to 51 mm) stripe. Where the door molding does not provide sufficient flat surface on which to locate the stripe, the stripe shall be permitted to be located on the wall surrounding the frame.

1025.3 Uniformity. Placement and dimensions of markings shall be consistent and uniform throughout the same enclosure.

1025.4 Self-luminous and photoluminescent. Luminous egress path markings shall be permitted to be made of any material, including paint, provided that an electrical charge is not required to maintain the required luminance. Such materials shall include, but not be limited to, self-luminous materials and photoluminescent materials. Materials shall comply with either of the following standards:

1. UL 1994.
2. ASTM E2072, except that the charging source shall be 1 footcandle (11 lux) of fluorescent illumination for 60 minutes, and the minimum luminance shall be 30 milicandelas per square meter at 10 minutes and 5 milicandelas per square meter after 90 minutes.

1025.5 Illumination. Where photoluminescent exit path markings are installed, they shall be provided with not less than 1 footcandle (11 lux) of illumination for not less than 60 minutes prior to periods when the building is occupied and continuously during occupancy.

SECTION 1026—HORIZONTAL EXITS

1026.1 General. Horizontal exits serving as an exit in a means of egress system shall comply with the requirements of this section. A horizontal exit shall not serve as the only exit from a portion of a building, and where two or more exits are required, not more than one-half of the total number of exits or total exit minimum width or required capacity shall be horizontal exits.

Exceptions:

1. Horizontal exits are permitted to comprise two-thirds of the required exits from any building or floor area for occupancies in Group I-2.
2. Horizontal exits are permitted to comprise 100 percent of the exits required for occupancies in Group I-3. Not less than 6 square feet (0.6 m^2) of accessible space per occupant shall be provided on each side of the horizontal exit for the total number of people in adjoining compartments.

1026.2 Separation. The separation between buildings or refuge areas connected by a horizontal exit shall be provided by a fire wall complying with Section 706; or by a fire barrier complying with Section 707 or a horizontal assembly complying with Section 711, or both. The minimum fire-resistance rating of the separation shall be 2 hours. Opening protectives in horizontal exits shall also comply with Section 716. Duct and air transfer openings in a fire wall or fire barrier that serves as a horizontal exit shall also comply with

Section 717. The horizontal exit separation shall extend vertically through all levels of the building unless floor assemblies have a fire-resistance rating of not less than 2 hours and do not have unprotected openings.

Exception: A fire-resistance rating is not required at horizontal exits between a building area and an above-grade pedestrian walkway constructed in accordance with Section 3104, provided that the distance between connected buildings is more than 20 feet (6096 mm).

Horizontal exits constructed as fire barriers shall be continuous from exterior wall to exterior wall so as to divide completely the floor served by the horizontal exit.

1026.3 Opening protectives. Fire doors in horizontal exits shall be self-closing or automatic-closing when activated by a smoke detector in accordance with Section 716.2.6.6. Doors, where located in a cross-corridor condition, shall be automatic-closing by activation of a smoke detector installed in accordance with Section 716.2.6.6.

1026.4 Refuge area. The refuge area of a horizontal exit shall be a space occupied by the same tenant or a public area and each such refuge area shall be adequate to accommodate the original occupant load of the refuge area plus the occupant load anticipated from the adjoining compartment. The anticipated occupant load from the adjoining compartment shall be based on the capacity of the horizontal exit doors entering the refuge area or the total occupant load of the adjoining compartment, whichever is less.

1026.4.1 Capacity. The capacity of the refuge area shall be computed based on a net floor area allowance of 3 square feet (0.2787 m^2) for each occupant to be accommodated therein. Where the horizontal exit also forms a smoke compartment, the capacity of the refuge area for Group I-2, I-3 *and R-2.1* occupancies and ambulatory care facilities shall comply with Sections 407.5.3, 408.6.2, *420.6.2* and 422.3.2 as applicable.

1026.4.2 Number of exits. The refuge area into which a horizontal exit leads shall be provided with exits adequate to meet the occupant requirements of this chapter, but not including the added occupant load imposed by persons entering the refuge area through horizontal exits from other areas. *In other than I-3 occupancies,* not less than one refuge area exit shall lead directly to the exterior or to an interior exit stairway or ramp.

Exception: The adjoining compartment shall not be required to have a stairway or door leading directly outside, provided that the refuge area into which a horizontal exit leads has stairways or doors leading directly outside and are so arranged that egress shall not require the occupants to return through the compartment from which egress originates.

1026.5 Standpipes. Standpipes and standpipe hose connections shall be provided where required by Sections 905.3 and 905.4.

1026.6 Two-way communication. *Where a refuge area does not contain a two-way communication system at an elevator landing or within an area of refuge, a two-way communication system shall be installed in an approved location in a public area and shall comply with Sections 1009.8.1, 1009.8.2 and 1009.11.*

Exception: *Two-way communication systems are not required in Group I-2 and I-3 facilities.*

SECTION 1027—EXTERIOR EXIT STAIRWAYS AND RAMPS

1027.1 General. Exterior exit stairways and ramps serving as an exit component in a means of egress system shall comply with the requirements of this section.

1027.2 Use in a means of egress. Exterior exit stairways shall not be used as an element of a required means of egress for Group I-2 occupancies. For occupancies in other than Group I-2, exterior exit stairways and ramps shall not be used as an element of a required means of egress for buildings exceeding six stories above grade plane or that are high-rise buildings.

1027.3 Open side. Exterior exit stairways and ramps serving as an element of a required means of egress shall be open on not less than one side, except for required structural columns, beams, handrails and guards. An open side shall have not less than 35 square feet (3.3 m^2) of aggregate open area adjacent to each floor level and the level of each intermediate landing. The required open area shall be located not less than 42 inches (1067 mm) above the adjacent floor or landing level.

1027.4 Side yards. The open areas adjoining exterior exit stairways or ramps shall be either yards, courts or public ways; the remaining sides are permitted to be enclosed by the exterior walls of the building.

1027.5 Location. Exterior exit stairways and ramps shall have a minimum fire separation distance of 10 feet (3048 mm) measured at right angles from the exterior edge of the stairway or ramps, including landings, to:

1. Adjacent lot lines.
2. Other portions of the building.
3. Other buildings on the same lot unless the adjacent building exterior walls and openings are protected in accordance with Section 705 based on fire separation distance.

For the purposes of this section, other portions of the building shall be treated as separate buildings.

Exception: Exterior exit stairways and ramps serving individual dwelling units of Group R-3 shall have a minimum fire separation distance of 5 feet (1525 mm).

1027.6 Exterior exit stairway and ramp protection. Exterior exit stairways and ramps shall be separated from the interior of the building as required in Section 1023.2. Openings shall be limited to those necessary for egress from normally occupied spaces. Where

a vertical plane projecting from the edge of an exterior exit stairway or ramp and landings is exposed by other parts of the building at an angle of less than 180 degrees (3.14 rad), the exterior wall shall be rated in accordance with Section 1023.7.

Exceptions:

1. Separation from the interior of the building is not required for occupancies, other than those in Group R-1 or R-2, in buildings that are not more than two stories above grade plane where a level of exit discharge serving such occupancies is the first story above grade plane.
2. Separation from the interior of the building is not required where the exterior exit stairway or ramp is served by an exterior exit ramp or balcony that connects two remote exterior exit stairways or other approved exits with a perimeter that is not less than 50 percent open. To be considered open, the opening shall be not less than 50 percent of the height of the enclosing wall, with the top of the openings not less than 7 feet (2134 mm) above the top of the balcony.
3. Separation from the open-ended corridor of the building is not required for exterior exit stairways or ramps, provided that Items 3.1 through 3.5 are met:
    3.1. The building, including open-ended corridors, and stairways and ramps, shall be equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2.
    3.2. The open-ended corridors comply with Section 1020.
    3.3. The open-ended corridors are connected on each end to an exterior exit stairway or ramp complying with Section 1027.
    3.4. The exterior walls and openings adjacent to the exterior exit stairway or ramp comply with Section 1023.7.
    3.5. At any location in an open-ended corridor where a change of direction exceeding 45 degrees (0.79 rad) occurs, a clear opening of not less than 35 square feet (3.3 m^2) or an exterior stairway or ramp shall be provided. Where clear openings are provided, they shall be located so as to minimize the accumulation of smoke or toxic gases.
4. In Group R-3 occupancies not more than four stories in height, exterior exit stairways and ramps serving individual dwelling units are not required to be separated from the interior of the building where the exterior exit stairway or ramp discharges directly to grade.

SECTION 1028—EXIT DISCHARGE

1028.1 General. The exit discharge shall comply with Sections 1028 and 1029 and the applicable requirements of Sections 1003 through 1015.

1028.2 Exit discharge. Exits shall discharge directly to the exterior of the building. The exit discharge shall be at grade or shall provide a direct path of egress travel to grade. The exit discharge shall not reenter a building. The combined use of Exceptions 1 and 2 shall not exceed 50 percent of the number and minimum width or required capacity of the required exits.

Exceptions:

1. Not more than 50 percent of the number and minimum width or required capacity of interior exit stairways and ramps is permitted to egress through areas, including atriums, on the level of discharge provided that all of the following conditions are met:
    1.1. Discharge of interior exit stairways and ramps shall be provided with a free and unobstructed path of travel to an exterior exit door and such exit is readily visible and identifiable from the point of termination of the enclosure.
    1.2. The entire area of the level of exit discharge is separated from areas below by construction conforming to the fire-resistance rating for the enclosure.
    1.3. The egress path from the interior exit stairway and ramp on the level of exit discharge is protected throughout by an approved automatic sprinkler system. Portions of the level of exit discharge with access to the egress path shall be either equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2, or separated from the egress path in accordance with the requirements for the enclosure of interior exit stairways or ramps.
    1.4. Where a required interior exit stairway or ramp and an exit access stairway or ramp serve the same floor level and terminate at the same level of exit discharge, the termination of the exit access stairway or ramp and the exit discharge door of the interior exit stairway or ramp shall be separated by a distance of not less than 30 feet (9144 mm) or not less than one-fourth the length of the maximum overall diagonal dimension of the building, whichever is less. The distance shall be measured in a straight line between the exit discharge door from the interior exit stairway or ramp and the last tread of the exit access stairway or termination of slope of the exit access ramp.
2. Not more than 50 percent of the number and minimum width or required capacity of the interior exit stairways and ramps is permitted to egress through a vestibule provided that all of the following conditions are met:
    2.1. The entire area of the vestibule is separated from areas below by construction conforming to the fire-resistance rating of the interior exit stairway or ramp enclosure.
    2.2. The depth from the exterior of the building is not greater than 10 feet (3048 mm) and the length is not greater than 30 feet (9144 mm).

2.3. The area is separated from the remainder of the level of exit discharge by a fire partition constructed in accordance with Section 708.

Exception: The maximum transmitted temperature rise is not required.

2.4. The area is used only for means of egress and exits directly to the outside.

3. Horizontal exits complying with Section 1026 shall not be required to discharge directly to the exterior of the building.

1028.3 Exit discharge width or capacity. The minimum width or required capacity of the exit discharge shall be not less than the minimum width or required capacity of the exits being served.

1028.4 Exit discharge components. Exit discharge components shall be sufficiently open to the exterior so as to minimize the accumulation of smoke and toxic gases.

1028.5 Access to a public way. The exit discharge shall provide a direct and unobstructed access to a public way.

Exception: Where access to a public way cannot be provided, a safe dispersal area shall be provided where all of the following are met:

1. The area shall be of a size to accommodate not less than 5 square feet (0.46 m^2) for each person.
2. *For other than Group E buildings,* the area shall be located on the same lot not less than 50 feet (15 240 mm) away from the building requiring egress. *For Group E buildings, the area shall be located on the same lot at least 50 feet (15 240 mm) away from any building.*
3. The area shall be permanently maintained and identified as a safe dispersal area.
4. The area shall be provided with a safe and unobstructed path of travel from the building.
5. *In correctional facilities, the area shall be of a size to accommodate not less than 7 square feet (0.6503 m^2) for each person. Accessible path of egress travel to the safe dispersal area and clear ground space for 5 percent of the occupants meeting Section 11B-305.3 shall be provided.*
6. *At facilities regulated by Chapter 11B, an accessible area within the space required by Exception Item 1 shall be provided for a minimum of 2 percent of the facility occupants served by the safe dispersal area. For each occupant, the accessible area shall provide clear ground space complying with Section 11B-305. Accessible routes complying with Chapter 11B, Division 4 shall connect the accessible area with all accessible exits served by the safe dispersal area.*

SECTION 1029—EGRESS COURTS

1029.1 General. Egress courts serving as an exit discharge component in the means of egress system shall comply with the requirements in this section.

1029.2 Width or capacity. The required capacity of egress courts shall be determined as specified in Section 1005.1, but the minimum width shall be not less than 44 inches (1118 mm), except as specified herein. Egress courts serving Group R-3 and U occupancies shall be not less than 36 inches (914 mm) in width. The required capacity and width of egress courts shall be unobstructed to a height of 7 feet (2134 mm). The width of the egress court shall be not less than the required capacity.

Exception: Encroachments complying with Section 1005.7.

1029.3 Construction and openings. Where an egress court serving a building or portion thereof is less than 10 feet (3048 mm) in width, the egress court walls shall have not less than 1-hour fire-resistance-rated construction for a distance of 10 feet (3048 mm) above the floor of the egress court. Openings within such walls shall be protected by opening protectives having a fire protection rating of not less than $^3/_4$ hour.

Exceptions:

1. Egress courts serving an occupant load of less than 10.
2. Egress courts serving Group R-3.
3. Egress courts, located at grade, that provide direct and unobstructed access to a public way through two or more independent paths. The minimum width provided along each path shall be based on the required width or the required capacity, whichever is greater, and shall be maintained along each path.

SECTION 1030—ASSEMBLY

1030.1 General. A room or space used for assembly purposes that contains seats, tables, displays, equipment or other material shall comply with this section.

Exception: *Group A occupancies within Group I-3 facilities are exempt from egress requirements of Section 1030.*

1030.1.1 Bleachers. Bleachers, grandstands and folding and telescopic seating, that are not building elements, shall comply with ICC 300.

1030.1.1.1 Spaces under grandstands and bleachers. Spaces under grandstands or bleachers shall be separated by fire barriers complying with Section 707 and horizontal assemblies complying with Section 711 with not less than 1-hour fire-resistance-rated construction.

Exceptions:

1. Ticket booths less than 100 square feet (9.29 m^2) in area.
2. Toilet rooms.

3. Other accessory use areas 1,000 square feet (92.9 m^2) or less in area and equipped with an automatic sprinkler system in accordance with Section 903.3.1.1.

1030.2 Assembly main exit. A building, room or space used for assembly purposes that has an occupant load of greater than 300 and is provided with a main exit, that main exit shall be of sufficient capacity to accommodate not less than one-half of the occupant load, but such capacity shall be not less than the total required capacity of all means of egress leading to the exit. Where the building is classified as a Group A occupancy, the main exit shall front on not less than one street or an unoccupied space of not less than *20 feet (6096 mm)* in width that adjoins a street or public way. In a building, room or space used for assembly purposes where there is not a well-defined main exit or where multiple main exits are provided, exits shall be permitted to be distributed around the perimeter of the building provided that the total capacity of egress is not less than 100 percent of the required capacity *and not less than one exit shall discharge on a street or an unoccupied space of not less than 20 feet (6096 mm) in capacity that adjoins a street or public way. Smoke-protected seating shall comply with Section 1030.6.2.*

1030.3 Assembly other exits. In addition to having access to a main exit, each level in a building used for assembly purposes having an occupant load greater than 300 and provided with a main exit, shall be provided with additional means of egress that shall provide an egress capacity for not less than one-half of the total occupant load served by that level and shall comply with Section 1007.1. *Not less than one-half of the additional means of egress required by this section shall be directly to an exit, or through a lobby, that is not used to access the main exit, to an exit or to a 1-hour-rated corridor to an exit. In a building used for assembly purposes where there is not a well-defined main exit or where multiple main exits are provided, exits for each level shall be permitted to be distributed around the perimeter of the building, provided that the total width of egress is not less than 100 percent of the required width and not less than one exit shall discharge on a street or an unoccupied space of not less than 20 feet (6096 mm) in capacity that adjoins a street or public way. Smoke-protected seating shall comply with Section 1030.6.2.*

1030.3.1 Occupant loads between 100 and 300. *Group A occupancies or assembly occupancies accessory to Group E occupancies that have an occupant load of 100 to 300 not less than one of the required means of egress shall exit through one of the following:*

1. *Directly to an exit*
2. *Egress through a lobby that is not used to access the other required exit*
3. *To a one-hour rated corridor to an exit*
4. *Continuous through a one-hour rated lobby to an exit.*

Not less than one exit shall discharge on a street or an unoccupied space of not less than 20 feet (6096 mm) in capacity that adjoins a street or public way.

1030.4 Foyers and lobbies. In Group A-1 occupancies, where persons are admitted to the building at times when seats are not available, such persons shall be allowed to wait in a lobby or similar space, provided that such lobby or similar space shall not encroach on the minimum width or required capacity of the means of egress. Such foyer, if not directly connected to a public street by all the main entrances or exits, shall have a straight and unobstructed corridor or path of travel to every such main entrance or exit.

1030.5 Interior balcony and gallery means of egress. For balconies, galleries or press boxes having a seating capacity of 50 or more located in a building, room or space used for assembly purposes, not less than two means of egress shall be provided, with one from each side of every balcony, gallery or press box.

1030.6 Capacity of aisle for assembly. The required capacity of aisles shall be not less than that determined in accordance with Section 1030.6.1 where smoke-protected assembly seating is not provided, Section 1030.6.2 where smoke-protected assembly seating is provided and Section 1030.6.3 where open-air assembly seating is provided.

1030.6.1 Without smoke protection. The required capacity in inches (mm) of the aisles for assembly seating without smoke protection shall be not less than the occupant load served by the egress element in accordance with all of the following, as applicable:

1. Not less than 0.3 inch (7.6 mm) of aisle capacity for each occupant served shall be provided on stepped aisles having riser heights 7 inches (178 mm) or less and tread depths 11 inches (279 mm) or greater, measured horizontally between tread nosings.
2. Not less than 0.005 inch (0.127 mm) of additional aisle capacity for each occupant shall be provided for each 0.10 inch (2.5 mm) of riser height above 7 inches (178 mm).
3. Where egress requires stepped aisle descent, not less than 0.075 inch (1.9 mm) of additional aisle capacity for each occupant shall be provided on those portions of aisle capacity that do not have a handrail within a horizontal distance of 30 inches (762 mm).
4. Ramped aisles, where slopes are steeper than one unit vertical in 12 units horizontal (8-percent slope), shall have not less than 0.22 inch (5.6 mm) of clear aisle capacity for each occupant served. Level or ramped aisles, where slopes are not steeper than one unit vertical in 12 units horizontal (8-percent slope), shall have not less than 0.20 inch (5.1 mm) of clear aisle capacity for each occupant served.

1030.6.2 Smoke-protected assembly seating. The required capacity in inches (mm) of the aisle for smoke-protected assembly seating shall be not less than the occupant load served by the egress element multiplied by the appropriate factor in Table 1030.6.2. The total number of seats specified shall be those within the space exposed to the same smoke-protected environment.

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Interpolation is permitted between the specific values shown. A life safety evaluation, complying with NFPA 101, shall be done for a facility utilizing the reduced width requirements of Table 1030.6.2 for smoke-protected assembly seating.

TABLE 1030.6.2—CAPACITY FOR AISLES FOR SMOKE-PROTECTED ASSEMBLY

TOTAL NUMBER OF SEATS IN THE SMOKE-PROTECTED ASSEMBLY SEATING	INCHES OF CAPACITY PER SEAT SERVED			
	Stepped aisles with handrails within 30 inches	Stepped aisles without handrails within 30 inches	Level aisles or ramped aisles not steeper than 1 in 10 in slope	Ramped aisles steeper than 1 in 10 in slope
Equal to or less than 5,000	0.200	0.250	0.150	0.165
10,000	0.130	0.163	0.100	0.110
15,000	0.096	0.120	0.070	0.077
20,000	0.076	0.095	0.056	0.062
Equal to or greater than 25,000	0.060	0.075	0.044	0.048

For SI: 1 inch = 25.4 mm.

1030.6.2.1 Smoke control. Aisles and aisle accessways serving a smoke-protected assembly seating area shall be provided with a smoke control system complying with Section 909 or natural ventilation designed to maintain the smoke level not less than 6 feet (1829 mm) above the floor of the means of egress.

1030.6.2.2 Roof height. A smoke-protected assembly seating area with a roof shall have the lowest portion of the roof deck not less than 15 feet (4572 mm) above the highest aisle or aisle accessway.

Exception: A roof canopy in an outdoor stadium shall be permitted to be less than 15 feet (4572 mm) above the highest aisle or aisle accessway provided that there are no objects less than 80 inches (2032 mm) above the highest aisle or aisle accessway.

1030.6.2.3 Automatic sprinklers. Enclosed areas with walls and ceilings in buildings or structures containing smoke-protected assembly seating shall be protected with an approved automatic sprinkler system in accordance with Section 903.3.1.1.

Exceptions:

1. The floor area used for contests, performances or entertainment provided that the roof construction is more than 50 feet (15 240 mm) above the floor level and the use is restricted to low fire hazard uses.
2. Press boxes and storage facilities less than 1,000 square feet (93 m^2) in area.

1030.6.3 Open-air assembly seating. In open-air assembly seating, the required capacity in inches (mm) of aisles shall be not less than the total occupant load served by the egress element multiplied by 0.08 (2.0 mm) where egress is by stepped aisle and multiplied by 0.06 (1.52 mm) where egress is by level aisles and ramped aisles.

Exception: The required capacity in inches (mm) of aisles shall be permitted to comply with Section 1030.6.2 for the number of seats in the open-air assembly seating where Section 1030.6.2 permits less capacity.

1030.6.3.1 Automatic sprinklers. Enclosed areas with walls and ceilings in buildings or structures containing open-air assembly seating shall be protected with an approved automatic sprinkler system in accordance with Section 903.3.1.1.

Exceptions:

1. The floor area used for contests, performances or entertainment, provided that the roof construction is more than 50 feet (15 240 mm) above the floor level and the use is restricted to low fire hazard uses.
2. Press boxes and storage facilities less than 1,000 square feet (93 m^2) in area.
3. Open-air assembly seating facilities where seating and the means of egress in the seating area are essentially open to the outside.

1030.6.3.2 Public address system. *See Section 907.2.1.1.*

1030.7 Travel distance. The exit access travel distance shall comply with Section 1017. Where aisles are provided for seating, the distance shall be measured along the aisles and aisle accessways without travel over or on the seats.

Exceptions:

1. In facilities with smoke-protected assembly seating, the total exit access travel distance shall be not greater than 400 feet (122 m). That portion of the total permitted exit access travel distance from each seat to the nearest entrance to a vomitory or concourse shall not exceed 200 feet (60 960 mm). The portion of the total permitted exit access travel distance from the entrance to the vomitory or concourse to one of the following shall not exceed 200 feet (60 960 mm):
   1.1. The closest riser of an exit access stairway.
   1.2. The closest slope of an exit access ramp.
   1.3. An exit.

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2. In facilities with open-air assembly seating of Type III, IV or V construction, the total exit access travel distance to one of the following shall not exceed 400 feet (122 m):
   2.1. The closest riser of an exit access stairway.
   2.2. The closest slope of an exit access ramp.
   2.3. An exit.
3. In facilities with open-air assembly seating of Type I or II construction, the total exit access travel distance shall not be limited.

1030.8 Common path of egress travel. The common path of egress travel for a room or space used for assembly purposes having fixed seating shall not exceed 30 feet (9144 mm) from any seat to a point where an occupant has a choice of two paths of egress travel to two exits.

Exceptions:

1. For areas serving less than 50 occupants, the common path of egress travel shall not exceed 75 feet (22 860 mm).
2. For smoke-protected or open-air assembly seating, the common path of egress travel shall not exceed 50 feet (15 240 mm).

1030.8.1 Path through adjacent row. Where one of the two paths of travel is across the aisle through a row of seats to another aisle, there shall be not more than 24 seats between the two aisles, and the minimum clear width between rows for the row between the two aisles shall be 12 inches (305 mm) plus 0.6 inch (15.2 mm) for each additional seat above seven in the row between aisles.

Exception: For smoke-protected or open-air assembly seating there shall be not more than 40 seats between the two aisles and the minimum clear width shall be 12 inches (305 mm) plus 0.3 inch (7.6 mm) for each additional seat.

1030.9 Assembly aisles are required. Every occupied portion of any building, room or space used for assembly purposes that contains seats, tables, displays, similar fixtures or equipment shall be provided with aisles leading to exits or exit access doorways in accordance with this section.

1030.9.1 Minimum aisle width. The minimum clear width for aisles shall comply with one of the following:

1. Forty-eight inches (1219 mm) for stepped aisles having seating on both sides.

   Exception: Thirty-six inches (914 mm) where the stepped aisles serve less than 50 seats.
2. Thirty-six inches (914 mm) for stepped aisles having seating on only one side.

   Exception: Twenty-three inches (584 mm) between a stepped aisle handrail and seating where a stepped aisle does not serve more than five rows on one side.
3. Twenty-three inches (584 mm) between a stepped aisle handrail or guard and seating where the stepped aisle is subdivided by a mid-aisle handrail.
4. Forty-two inches (1067 mm) for level or ramped aisles having seating on both sides.

   Exceptions:

1. Thirty-six inches (914 mm) where the aisle serves less than 50 seats.
2. Thirty inches (762 mm) where the aisle serves less than 15 seats and does not serve as part of an accessible route.

5. Thirty-six inches (914 mm) for level or ramped aisles having seating on only one side.

   Exception: Thirty inches (762 mm) where the aisle serves fewer than 15 seats and does not serve as part of an accessible route.
6. *Libraries with open book stacks shall have main aisles not less than 44 inches (1118 mm) in width, and side, range and end aisles not less than 36 inches (914 mm) in width.*

1030.9.2 Aisle catchment area. The aisle shall provide sufficient capacity for the number of persons accommodated by the catchment area served by the aisle. The catchment area served by an aisle is that portion of the total space served by that section of the aisle. In establishing catchment areas, the assumption shall be made that there is a balanced use of all means of egress, with the number of persons in proportion to egress capacity.

1030.9.3 Converging aisles. Where aisles converge to form a single path of egress travel, the required capacity of that path shall be not less than the combined required capacity of the converging aisles.

1030.9.4 Uniform width and capacity. Those portions of aisles, where egress is possible in either of two directions, shall be uniform in minimum width or required capacity.

1030.9.5 Dead-end aisles. Each end of an aisle shall be continuous to a cross aisle, foyer, doorway, vomitory, concourse or stairway in accordance with Section 1030.9.7 having access to an exit.

Exceptions:

1. Dead-end aisles not greater than 20 feet (6096 mm) in length.
2. Dead-end aisles longer than 20 feet (6096 mm) where seats beyond the 20-foot (6096 mm) dead-end aisle are not more than 24 seats from another aisle, measured along a row of seats having a minimum clear width of 12 inches (305 mm) plus 0.6 inch (15.2 mm) for each additional seat above seven in the row where seats have backrests or beyond 10 where seats are without backrests in the row.

3. Dead-end aisles serving fewer than 50 seats and complying with Section 1030.8.
4. For smoke-protected or open-air assembly seating, dead-end vertical aisles of 21 or fewer rows.
5. For smoke-protected or open-air assembly seating, dead-end aisles beyond the 21-row dead-end aisle where such rows are not more than 40 seats from another aisle, measured along a row of seats having an aisle accessway with a minimum clear width of 12 inches (305 mm) plus 0.3 inch (7.6 mm) for each additional seat above seven in the row where seats have backrests or beyond 10 where seats are without backrests in the row.

1030.9.6 Aisle measurement. The clear width for aisles shall be measured to walls, edges of seating and tread edges except for permitted projections.

Exception: The clear width of aisles adjacent to seating at tables shall be permitted to be measured in accordance with Section 1030.13.1.

1030.9.6.1 Assembly aisle obstructions. There shall not be obstructions in the minimum width or required capacity of aisles.

Exception: Handrails are permitted to project into the required width of stepped aisles and ramped aisles in accordance with Section 1014.9.

1030.9.7 Stairways connecting to stepped aisles. A stairway that connects a stepped aisle to a cross aisle or concourse shall be permitted to comply with the assembly aisle walking surface requirements of Section 1030.14. Transitions between stairways and stepped aisles shall comply with Section 1030.10.

1030.9.8 Stairways connecting to vomitories. A stairway that connects a vomitory to a cross aisle or concourse shall be permitted to comply with the assembly aisle walking surface requirements of Section 1030.14. Transitions between stairways and stepped aisles shall comply with Section 1030.10.

1030.10 Transitions. Transitions between stairways and stepped aisles shall comply with either Section 1030.10.1 or 1030.10.2.

1030.10.1 Transitions to stairways that maintain stepped aisle riser and tread dimensions. Stepped aisles, transitions and stairways that maintain the stepped aisle riser and tread dimensions shall comply with Section 1030.14 as one exit access component.

1030.10.2 Transitions to stairways that do not maintain stepped aisle riser and tread dimensions. Transitions between stairways and stepped aisles having different riser and tread dimensions shall comply with Sections 1030.10.2.1 through 1030.10.3.

1030.10.2.1 Stairways and stepped aisles in a straight run. Where stairways and stepped aisles are in a straight run, transitions shall have one of the following:

1. A depth of not less than 22 inches (559 mm) where the treads on the descending side of the transition have greater depth.
2. A depth of not less than 30 inches (762 mm) where the treads on the descending side of the transition have lesser depth.

1030.10.2.2 Stairways that change direction from stepped aisles. Transitions where the stairway changes direction from the stepped aisle shall have a minimum depth of 11 inches (280 mm) or the stepped aisle tread depth, whichever is greater, between the stepped aisle and stairway.

1030.10.3 Transition marking. A distinctive marking stripe shall be provided at each nosing or leading edge adjacent to the transition. Such stripe shall be not less than 1 inch (25 mm), and not more than 2 inches (51 mm), wide. The edge marking stripe shall be distinctively different from the stepped aisle contrasting marking stripe.

1030.11 Stepped aisles at vomitories. Stepped aisles that change direction at vomitories shall comply with Section 1030.11.1 Transitions between a stepped aisle above a vomitory and a stepped aisle to the side of a vomitory shall comply with Section 1030.11.2.

1030.11.1 Stepped aisles that change direction at vomitories. Stepped aisle treads where the stepped aisle changes direction at a vomitory shall have a depth of not less than 11 inches (280 mm) or the stepped aisle tread depth, whichever is greater. The height of a stepped aisle tread above a transition at a vomitory shall comply with Section 1030.14.2.2.

1030.11.2 Stepped aisle transitions at the top of vomitories. Transitions between the stepped aisle above a vomitory and stepped aisles to the side of a vomitory shall have a depth of not less than 11 inches (280 mm) or the stepped aisle tread depth, whichever is greater.

1030.12 Construction. Aisles, stepped aisles and ramped aisles shall be built of materials consistent with the types permitted for the type of construction of the building.

Exception: Wood handrails shall be permitted for all types of construction.

1030.12.1 Walking surface. The surface of aisles, stepped aisles and ramped aisles shall be of slip-resistant materials that are securely attached. The surface for stepped aisles shall comply with Section 1011.7.1.

1030.12.2 Outdoor conditions. Outdoor aisles, stepped aisles and ramped aisles and outdoor approaches to aisles, stepped aisles and ramped aisles shall be designed so that water will not accumulate on the walking surface.

1030.13 Aisle accessways. Aisle accessways for seating at tables shall comply with Section 1030.13.1. Aisle accessways for seating in rows shall comply with Section 1030.13.2.

1030.13.1 Seating at tables. Where seating is located at a table or counter and is adjacent to an aisle or aisle accessway, the measurement of required clear width of the aisle or aisle accessway shall be made to a line 19 inches (483 mm) away from and parallel to the edge of the table or counter. The 19-inch (483 mm) distance shall be measured perpendicular to the side of the

table or counter. In the case of other side boundaries for aisles or aisle accessways, the clear width shall be measured to walls, edges of seating and tread edges.

Exception: Where tables or counters are served by fixed seats, the width of the aisle or aisle accessway shall be measured from the back of the seat.

1030.13.1.1 Aisle accessway capacity and width for seating at tables. Aisle accessways serving arrangements of seating at tables or counters shall comply with the capacity requirements of Section 1005.1 but shall not have less than 12 inches (305 mm) of width plus $^1/_2$ inch (12.7 mm) of width for each additional 1 foot (305 mm), or fraction thereof, beyond 12 feet (3658 mm) of aisle accessway length measured from the center of the seat farthest from an aisle.

Exception: Portions of an aisle accessway having a length not exceeding 6 feet (1829 mm) and used by a total of not more than four persons.

1030.13.1.2 Seating at table aisle accessway length. The length of travel along the aisle accessway shall not exceed 30 feet (9144 mm) from any seat to the point where a person has a choice of two or more paths of egress travel to separate exits.

1030.13.2 Clear width of aisle accessways serving seating in rows. Where seating rows have 14 or fewer seats, the minimum clear aisle accessway width shall be not less than 12 inches (305 mm) measured as the clear horizontal distance from the back of the row ahead and the nearest projection of the row behind. Where chairs have automatic or self-rising seats, the measurement shall be made with seats in the raised position. Where any chair in the row does not have an automatic or self-rising seat, the measurements shall be made with the seat in the down position. For seats with folding tablet arms, row spacing shall be determined with the tablet arm in the used position.

Exception: For seats with folding tablet arms, row spacing is permitted to be determined with the tablet arm in the stored position where the tablet arm when raised manually to vertical position in one motion automatically returns to the stored position by force of gravity.

1030.13.2.1 Dual access. For rows of seating served by aisles or doorways at both ends, there shall be not more than 100 seats per row. The minimum clear width of 12 inches (305 mm) between rows shall be increased by 0.3 inch (7.6 mm) for every additional seat beyond 14 seats where seats have backrests or beyond 21 where seats are without backrests. The minimum clear width is not required to exceed 22 inches (559 mm).

Exception: For smoke-protected or open-air assembly seating, the row length limits for a 12-inch-wide (305 mm) aisle accessway, beyond which the aisle accessway minimum clear width shall be increased, are in Table 1030.13.2.1.

TABLE 1030.13.2.1—SMOKE-PROTECTED OR OPEN-AIR ASSEMBLY AISLE ACCESSWAYS

NUMBER OF SEATS IN THE SMOKE-PROTECTED OR OPEN-AIR ASSEMBLY SEATING	MAXIMUM NUMBER OF SEATS PER ROW PERMITTED TO HAVE A MINIMUM 12-INCH CLEAR WIDTH AISLE ACCESSWAY			
	Aisle or doorway at both ends of row		Aisle or doorway at one end of row only	
	Seats with backrests	Seats without backrests	Seats with backrests	Seats without backrests
Less than 4,000	14	21	7	10
4,000 to 6,999	15	22	7	10
7,000 to 9,999	16	23	8	11
10,000 to 12,999	17	24	8	11
13,000 to 15,999	18	25	9	12
16,000 to 18,999	19	26	9	12
19,000 to 21,999	20	27	10	13
22,000 and greater	21	28	11	14

For SI: 1 inch = 25.4 mm.

1030.13.2.2 Single access. For rows of seating served by an *aisle* or doorway at only one end of the row, the minimum clear width of 12 inches (305 mm) between rows shall be increased by 0.6 inch (15.2 mm) for every additional seat beyond seven seats where seats have backrests or beyond 10 where seats are without backrests. The minimum clear width is not required to exceed 22 inches (559 mm).

Exception: For smoke-protected or open-air assembly seating, the row length limits for a 12-inch-wide (305 mm) aisle accessway, beyond which the aisle accessway minimum clear width shall be increased, are in Table 1030.13.2.1.

1030.14 Assembly aisle walking surfaces. Ramped aisles shall comply with Sections 1030.14.1 through 1030.14.1.3. Stepped aisles shall comply with Sections 1030.14.2 through 1030.14.2.4.

1030.14.1 Ramped aisles. Aisles that are sloped more than 1 unit vertical in 20 units horizontal (5-percent slope) shall be considered to be a ramped aisle. Ramped aisles that serve as part of an accessible route in accordance with Sections 1009 and 1109.2

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shall have a maximum slope of 1 unit vertical in 12 units horizontal (8-percent slope). The slope of other ramped aisles shall not exceed 1 unit vertical in 8 units horizontal (12.5-percent slope).

1030.14.1.1 Cross slope. The slope measured perpendicular to the direction of travel of a ramped aisle shall not be steeper than 1 unit vertical in 48 units horizontal (2-percent slope).

1030.14.1.2 Landings. Ramped aisles shall have landings in accordance with Sections 1012.6 through 1012.6.5. Landings for ramped aisles shall be permitted to overlap required aisles or cross aisles.

1030.14.1.3 Edge protection. Ramped aisles shall have edge protection in accordance with Sections 1012.10 and 1012.10.1.

Exception: In assembly spaces with fixed seating, edge protection is not required on the sides of ramped aisles where the ramped aisles provide access to the adjacent seating and aisle accessways.

1030.14.2 Stepped aisles. Aisles with a slope exceeding one unit vertical in eight units horizontal (12.5-percent slope) shall consist of a series of risers and treads that extends across the full width of aisles and complies with Sections 1030.14.2.1 through 1030.14.2.4.

1030.14.2.1 Treads. Tread depths shall be not less than 11 inches (279 mm) and shall have dimensional uniformity.

Exception: The tolerance between adjacent treads shall not exceed $^{3}/_{16}$ inch (4.8 mm).

1030.14.2.2 Risers. Where the gradient of stepped aisles is to be the same as the gradient of adjoining seating areas, the riser height shall be not less than 4 inches (102 mm) nor more than 8 inches (203 mm) and shall be uniform within each flight.

Exceptions:

1. Riser height nonuniformity shall be limited to the extent necessitated by changes in the gradient of the adjoining seating area to maintain adequate sightlines. Where nonuniformities exceed $^{3}/_{16}$ inch (4.8 mm) between adjacent risers, the exact location of such nonuniformities shall be indicated with a distinctive marking stripe on each tread at the nosing or leading edge adjacent to the nonuniform risers. Such stripe shall be not less than 1 inch (25 mm), and not more than 2 inches (51 mm), wide. The edge marking stripe shall be distinctively different from the contrasting marking stripe.
2. Riser heights not exceeding 9 inches (229 mm) shall be permitted where they are necessitated by the slope of the adjacent seating areas to maintain sightlines.

1030.14.2.2.1 Construction tolerances. The tolerance between adjacent risers on a stepped aisle that were designed to be equal height shall not exceed $^{3}/_{16}$ inch (4.8 mm). Where the stepped aisle is designed in accordance with Exception 1 of Section 1030.14.2.2, the stepped aisle shall be constructed so that each riser of unequal height, determined in the direction of descent, is not more than $^{3}/_{8}$ inch (9.5 mm) in height different from adjacent risers where stepped aisle treads are less than 22 inches (560 mm) in depth and $^{3}/_{4}$ inch (19.1 mm) in height different from adjacent risers where stepped aisle treads are 22 inches (560 mm) or greater in depth.

1030.14.2.3 Tread contrasting marking stripe. A contrasting marking stripe shall be provided on each tread at the nosing or leading edge such that the location of each tread is readily apparent when viewed in descent. Such stripe shall be not less than 1 inch (25 mm) and not more than 2 inches (51 mm) wide.

Exception: The contrasting marking stripe is permitted to be omitted where tread surfaces are such that the location of each tread is readily apparent when viewed in descent.

1030.14.2.4 Nosing and profile. Nosing and riser profile shall comply with Sections 1011.5.5 through 1011.5.5.3.

1030.15 Seat stability. In a building, room or space used for assembly purposes, the seats shall be securely fastened to the floor.

Exceptions:

1. In a building, room or space used for assembly purposes or portions thereof without ramped or tiered floors for seating and with 200 or fewer seats, the seats shall not be required to be fastened to the floor.
2. In a building, room or space used for assembly purposes or portions thereof with seating at tables and without ramped or tiered floors for seating, the seats shall not be required to be fastened to the floor.
3. In a building, room or space used for assembly purposes or portions thereof without ramped or tiered floors for seating and with greater than 200 seats, the seats shall be fastened together in groups of not less than three or the seats shall be securely fastened to the floor.
4. In a building, room or space used for assembly purposes where flexibility of the seating arrangement is an integral part of the design and function of the space and seating is on tiered levels, not more than 200 seats shall not be required to be fastened to the floor. Plans showing seating, tiers and aisles shall be submitted for approval.
5. Groups of seats within a building, room or space used for assembly purposes separated from other seating by railings, guards, partial height walls or similar barriers with level floors and having not more than 14 seats per group shall not be required to be fastened to the floor.
6. Seats intended for musicians or other performers and separated by railings, guards, partial height walls or similar barriers shall not be required to be fastened to the floor.

1030.16 Handrails. Ramped aisles having a slope exceeding one unit vertical in 15 units horizontal (6.7-percent slope) and stepped aisles shall be provided with handrails in compliance with Section 1014 located either at one or both sides of the aisle or within the aisle width. Where stepped aisles have seating on one side and the aisle width is 74 inches (1880 mm) or greater, two handrails are

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required. Where two handrails are required, one of the handrails shall be within 30 inches (762 mm) horizontally of the side of the tiered floor adjacent to the stepped aisle.

Exceptions:

1. Handrails are not required for ramped aisles with seating on both sides.
2. Handrails are not required where, at the side of the aisle, there is a guard with a top surface that complies with the grasp-ability requirements of handrails in accordance with Section 1014.4.
3. Handrail extensions are not required at the top and bottom of stepped aisles and ramped aisles to permit crossovers within the aisles.

1030.16.1 Discontinuous mid-aisle handrails. Where there is seating on both sides of the aisle, the mid-aisle handrails shall be discontinuous. Where a stepped aisle is required to have two handrails, the mid-aisle handrails shall be discontinuous. Gaps or breaks shall be provided at intervals not exceeding five rows to facilitate access to seating and to permit crossing from one side of the aisle to the other. These gaps or breaks shall have a clear width of not less than 22 inches (559 mm) and not greater than 36 inches (914 mm), measured horizontally, and the mid-aisle handrail shall have rounded terminations or bends.

1030.16.2 Handrail termination. Handrails located on the side of stepped aisles shall return to a wall, guard or the walking surface or shall be continuous to the handrail of an adjacent stepped aisle flight.

1030.16.3 Mid-aisle termination. Mid-aisle handrails shall not extend beyond the lowest riser and shall terminate within 18 inches (381 mm), measured horizontally, from the lowest riser. Handrail extensions are not required.

Exception: Mid-aisle handrails shall be permitted to extend beyond the lowest riser where the handrail extensions do not obstruct the width of the cross aisle.

1030.16.4 Rails. Where mid-aisle handrails are provided in stepped aisles, there shall be an additional rail located approximately 12 inches (305 mm) below the handrail. The rail shall be adequate in strength and attachment in accordance with Section 1607.9.1.2.

1030.17 Assembly guards. Guards adjacent to seating in a building, room or space used for assembly purposes shall be provided where required by Section 1015 and shall be constructed in accordance with Section 1015 except where provided in accordance with Sections 1030.17.1 through 1030.17.4. At bleachers, grandstands and folding and telescopic seating, guards must be provided where required by ICC 300 and Section 1030.17.1.

1030.17.1 Perimeter guards. Perimeter guards shall be provided where the footboards or walking surface of seating facilities are more than 30 inches (762 mm) above the floor or grade below. Where the seatboards are adjacent to the perimeter, guard height shall be 42 inches (1067 mm) high minimum, measured from the seatboard. Where the seats are self-rising, guard height shall be 42 inches (1067 mm) high minimum, measured from the floor surface. Where there is an aisle between the seating and the perimeter, the guard height shall be measured in accordance with Section 1015.3.

Exceptions:

1. Guards that impact sightlines shall be permitted to comply with Section 1030.17.3.
2. Bleachers, grandstands and folding and telescopic seating shall not be required to have perimeter guards where the seating is located adjacent to a wall and the space between the wall and the seating is less than 4 inches (102 mm).

1030.17.2 Cross aisles. Cross aisles located more than 30 inches (762 mm) above the floor or grade below shall have guards in accordance with Section 1015.

Where an elevation change of 30 inches (762 mm) or less occurs between a cross aisle and the adjacent floor or grade below, guards not less than 26 inches (660 mm) above the aisle floor shall be provided.

Exception: Where the backs of seats on the front of the cross aisle project 24 inches (610 mm) or more above the adjacent floor of the aisle, a guard need not be provided.

1030.17.3 Sightline-constrained guard heights. Unless subject to the requirements of Section 1030.17.4, a fascia or railing system in accordance with the guard requirements of Section 1015 and having a minimum height of 26 inches (660 mm) shall be provided where the floor or footboard elevation is more than 30 inches (762 mm) above the floor or grade below and the fascia or railing would otherwise interfere with the sightlines of immediately adjacent seating.

1030.17.4 Guards at the end of aisles. A fascia or railing system complying with the guard requirements of Section 1015 shall be provided for the full width of the aisle where the foot of the aisle is more than 30 inches (762 mm) above the floor or grade below. The fascia or railing shall be not less than 36 inches (914 mm) high and shall provide not less than 42 inches (1067 mm) measured diagonally between the top of the rail and the nosing of the nearest tread.

SECTION 1031—EMERGENCY ESCAPE AND RESCUE

1031.1 General. Emergency escape and rescue openings shall comply with the requirements of this section.

1031.2 Where required. In addition to the means of egress required by this chapter, emergency escape and rescue openings shall be provided in *Group R* occupancies.

Basements and sleeping rooms below the fourth story above grade plane shall have not fewer than one emergency escape and rescue opening in accordance with this section. Where basements contain one or more sleeping rooms, an emergency escape and rescue opening shall be required in each sleeping room, but shall not be required in adjoining areas of the basement. Such open-

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ings shall open directly into a public way or to a yard or court that opens to a public way, or to an egress balcony that leads to a public way.

Exceptions:

1. *In Groups R-1 and R-2 occupancies constructed of Type I, Type IIA, Type IIIA or Type IV construction equipped throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.1.*
2. *Group R-2.1 occupancies meeting the requirements for delayed egress in accordance with Section 1010.2.13 may have operable windows that are breakable in sleeping rooms permanently restricted to a maximum of 4-inch open position.*
3. Basements with a ceiling height of less than 80 inches (2032 mm) shall not be required to have emergency escape and rescue openings.
4. Emergency escape and rescue openings are not required from basements or sleeping rooms that have an exit door or exit access door that opens directly into a public way or to a yard, court or exterior egress balcony that leads to a public way.
5. Basements without habitable spaces and having not more than 200 square feet (18.6 m^2) in floor area shall not be required to have emergency escape and rescue openings.
6. Storm shelters are not required to comply with this section where the shelter is constructed in accordance with ICC 500.
7. Within individual dwelling and sleeping units in Groups R-2 and R-3, where the building is equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1, 903.3.1.2 or 903.3.1.3, sleeping rooms in basements shall not be required to have emergency escape and rescue openings provided that the basement has one of the following:
   - 7.1. One means of egress and one emergency escape and rescue opening.
   - 7.2. Two means of egress.
8. *In Group R-2.2 occupancies a certified fire escape is acceptable as a secondary means of egress for existing buildings for this section of the code.*

1031.2.1 Operational constraints and opening control devices. Emergency escape and rescue openings *and any exit doors* shall be *maintained free of any obstructions other than those allowed by this section and shall be* operational from inside the room without the use of keys or tools. Window-opening control devices complying with ASTM F2090 shall be permitted for use on windows serving as a required emergency escape and rescue opening. *The release mechanism shall be maintained operable at all times.*

Such bars, grills, grates or any similar devices shall be equipped with an approved exterior release device for use by the fire department only when required by the authority having jurisdiction.

Where security bars (burglar bars) are installed on emergency egress and rescue windows or doors, on or after July 1, 2000, such devices shall comply with California Building Standards Code, Part 12, Chapter 12-3 and other applicable provisions of Part 2.

***Exception:** Group R-1 occupancies provided with a monitored fire sprinkler system in accordance with Section 903.2.8 and designed in accordance with NFPA 13 may have openable windows permanently restricted to a maximum 4-inch (102 mm) open position.*

***1031.2.2 Maintenance.** Fire escape stairways and balconies shall be kept clear and unobstructed at all times and shall be maintained in good working order.*

***1031.2.3 Examination.** Fire escape stairways and balconies shall be examined for structural adequacy and safety by a registered design professional or other person acceptable to the fire code official every 5 years. The examination shall determine whether the fire escape stairways and balconies can support the dead load plus a live load of not less than 100 pounds per square foot (4.78 kN/m). An inspection report shall be submitted to the fire code official after such examination.*

1031.3 Emergency escape and rescue openings. Emergency escape and rescue openings shall comply with Sections 1031.3.1 through 1031.3.3.

1031.3.1 Minimum size. Emergency escape and rescue openings shall have a minimum net clear opening of 5.7 square feet (0.53 m^2).

Exception: The minimum net clear opening for grade-floor emergency escape and rescue openings shall be 5 square feet (0.46 m^2).

1031.3.2 Minimum dimensions. The minimum net clear opening height dimension shall be 24 inches (610 mm). The minimum net clear opening width dimension shall be 20 inches (508 mm). The net clear opening dimensions shall be the result of normal operation of the opening.

1031.3.3 Maximum height from floor. Emergency escape and rescue openings shall have the bottom of the clear opening not greater than 44 inches (1118 mm) measured from the floor.

1031.4 Emergency escape and rescue doors. Where a door is provided as the required emergency escape and rescue opening, it shall be a swinging door or a sliding door.

1031.5 Area wells. An emergency escape and rescue opening with the bottom of the clear opening below the adjacent grade shall be provided with an area well in accordance with Sections 1031.5.1 through 1031.5.3.

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1031.5.1 Minimum size. The minimum horizontal area of the area well shall be 9 square feet (0.84 m^2), with a horizontal projection and width of not less than 36 inches (914 mm). The area well shall allow the emergency escape and rescue opening to be fully opened.

Exception: The ladder or steps required by Section 1031.5.2 shall be permitted to encroach not more than 6 inches (152 mm) into the required dimensions of the area well.

1031.5.2 Ladders or steps. Area wells with a vertical depth of more than 44 inches (1118 mm) shall be equipped with an approved permanently affixed ladder or steps. The ladder or steps shall not be obstructed by the emergency escape and rescue opening when the window or door is in the open position. Ladders or steps required by this section shall not be required to comply with Section 1011.

1031.5.2.1 Ladders. Ladders or rungs shall have an inside width of at least 12 inches (305 mm), shall project at least 3 inches (76 mm) from the wall and shall be spaced not more than 18 inches (457 mm) on center (o.c.) vertically for the full height of the area well.

1031.5.2.2 Steps. Steps shall have an inside width of not less than 12 inches (305 mm), shall have treads greater than 5 inches (127 mm) in depth and a riser height not greater than 18 inches (457 mm) for the full height of the area well.

1031.5.3 Drainage. Area wells shall be designed for proper drainage by connecting to the building's foundation drainage system required by Section 1805.

Exception: A drainage system for area wells is not required where the foundation is on well-drained soil or sand-gravel mixture soils in accordance with the United Soil Classification System, Group I Soils, in accordance with Section 1803.5.1.

1031.6 Bars, grilles, covers and screens. Where bars, grilles, covers, screens or similar devices are placed over emergency escape and rescue openings or area wells that serve such openings, the minimum net clear opening size shall comply with Sections 1031.3 and 1031.5. Such devices shall be releasable or removable from the inside without the use of a key, tool or force greater than that which is required for normal operation of the emergency escape and rescue opening.

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CHAPTER

11

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CALIFORNIA BUILDING CODE – MATRIX ADOPTION TABLE
CHAPTER 11A – HOUSING ACCESSIBILITY

(Matrix Adoption Tables are nonregulatory, intended only as an aid to the code user.
See Chapter 1 for state agency authority and building applications.)

Adopting agency	BSC	BSC-CG	SFM	HCD			DSA			OSHPD							BSCC	DPH	AGR	DWR	CEC	CA	SL	SLC
				1	2	1/AC	AC	SS	SS/CC	1	1R	2	3	4	5	6								
Adopt entire chapter						X																		
Adopt entire chapter as amended (amended sections listed below)																								
Adopt only those sections that are listed below																								
Chapter / Section																								

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CHAPTER

11A HOUSING ACCESSIBILITY

NOTE 1: *Covered multifamily dwellings may be subject to the requirements of more than one jurisdiction or law, which would require compliance with each law. Where federal, state or local laws differ, the more stringent requirements apply. For additional information, see the Joint Statement of the Department of Housing and Urban Development and the Department of Justice issued April 30, 2013 (www.hud.gov).*

NOTE 2: *Dwelling units constructed as senior citizen housing may also be subject to the Unruh Civil Rights Act. Refer to Division I, Part 2 of the California Civil Code. For additional information regarding application, interpretation and enforcement, contact the California Department of Fair Employment and Housing.*

DIVISION I – APPLICATION, GENERAL PROVISIONS AND DEFINITIONS

Division I Table of Contents

Section 1101A Application

Section 1102A Building Accessibility

Section 1103A Design and Construction

Section 1104A Covered Multifamily Dwellings

Section 1105A Garages, Carports and Parking Facilities

Section 1106A Site and Building Characteristics

Section 1107A Definitions

SECTION 1101A—APPLICATION

1101A.1 Scope. *The application and authority of this chapter are identified and referenced in Sections 1.8.2.1.2 and 1102A for the Department of Housing and Community Development. Applicable sections are identified in the Matrix Adoption Tables of this code under the abbreviation HCD 1-AC.The provisions of this chapter shall apply to the following:*

1. *All newly-constructed covered multifamily dwellings.*
2. *New common use areas serving existing covered multifamily dwellings.*
3. *Additions to existing buildings, where the addition alone meets the definition of a covered multifamily dwelling.*
4. *New common-use areas serving new covered multifamily dwellings.*
5. *Where any portion of a building's exterior is preserved, but the interior of the building is removed, including all structural portions of floors and ceilings, the building is considered a new building for determining the application of this chapter.*

Chapter 11A generally does not apply to public accommodations such as hotels and motels and public housing. Public use areas, public accommodations and public housing as defined in Chapter 2 of this code are subject to provisions of the Division of the State Architect (DSA-AC) in Chapter 11B, and are referenced in Section 1.9.1.

Newly constructed covered multifamily dwellings, which can also be defined as public housing, shall be subject to the requirements of Chapter 11B.

SECTION 1102A—BUILDING ACCESSIBILITY

1102A.1 Where required. *Buildings or portions of buildings and facilities within the scope of this chapter shall be accessible to persons with disabilities. Each building on a building site shall be considered separately when determining the requirements contained in this chapter, except when calculating the number of units which must comply with Section 1102A.3.1. Dwelling units within a single structure separated by firewalls do not constitute separate buildings.*

Newly-constructed covered multifamily dwellings as defined in this chapter, include, but are not limited to, the following:

1. *Apartment buildings with 3 or more dwelling units including timeshare apartments not considered a place of public accommodation or transient lodging as defined in Health and Safety Code Section 19955 (a), and Chapter 2 of the California Building Code.*
2. *Condominiums with 4 or more dwelling units including timeshare condominiums not considered a place of public accommodation or transient lodging as defined in Health and Safety Code Section 19955 (a), and Chapter 2 of the California Building Code.*
3. *Lodging houses, as defined in Chapter 2 of the California Building Code, used as a residence with more than 3 but not more than 5 guest rooms.*
4. *Congregate residences, as defined in Chapter 2 of the California Building Code, with 3 or more sleeping units.*

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5. *Dwellings with 3 or more efficiency units, as defined in Chapter 2 of this code, or Section 17958.1 of the California Health and Safety Code.*
6. *Shelters for homeless persons, not otherwise subject to the disabled access provisions of the Division of the State Architect—Access Compliance (DSA-AC).*
7. *Dormitories, as defined in Chapter 2 of this code, with 3 or more guest rooms as defined in Chapter 2 of the California Building Code.*
8. *Timeshare dwellings with 3 or more units, not considered a place of public accommodations or transient lodging as defined in Health and Safety Code Section 19955 (a), and Chapter 2 of the California Building Code.*
9. *Other Group R occupancies in covered multifamily dwellings which are regulated by the Office of the State Fire Marshal. See Section 1.11.*
10. *Public housing as defined in Chapter 2 of this code is subject to provisions of the Division of the State Architect (DSA-AC) in Chapter 11B. Newly constructed covered multifamily dwellings, which can also be defined as public housing, shall be subject to the requirements of Chapter 11B.* >

1102A.2 Existing buildings. *The building standards contained in this chapter do not apply to the alteration, repair, rehabilitation or maintenance of multifamily dwellings constructed for first occupancy on or before March 13, 1991.*

Covered multifamily dwellings shall be maintained in compliance with the accessibility standards in effect at the time of construction. Apartments constructed prior to March 13, 1991 shall be maintained in compliance with the accessibility standards in effect at the time of construction.

Additions shall be subject to the requirements of this chapter, provided the addition, when considered alone, meets the definition of a covered multifamily dwelling, as defined in Chapter 2. New common use spaces serving existing covered multifamily dwellings shall be subject to the requirements of this chapter.

Note: *For all existing public use areas, public accommodations and public housing, see Chapter 11B for provisions of the Division of the State Architect—Access Compliance (DSA-AC).*

1102A.3 Multistory dwellings.

1102A.3.1 Multistory apartment or condominium dwellings in buildings with no elevator. *This section shall apply to multistory dwelling units on the ground floor of buildings without elevators for which an application for a construction permit is submitted on or after July 1, 2005.*

Exception: *Carriage units as defined in Chapter 2 and regulated only by the Department of Housing and Community Development as referenced in Section 1.8.2.1.2.*

At least 10 percent but not less than one of the multistory dwellings in apartment buildings with 3 or more dwelling units and/or condominiums with 4 or more dwelling units shall comply with the following:

1. *The primary entry to the dwelling unit shall be on an accessible route unless exempted by site impracticality tests in Section 1150A.*
2. *At least one powder room or bathroom shall be located on the primary entry level, served by an accessible route and shall comply with the provisions in Division IV.*
3. *All rooms or spaces located on the primary entry level shall be served by an accessible route and shall comply with the provisions in Division IV. Rooms and spaces located on the primary entry level and subject to this chapter may include but are not limited to kitchens, powder rooms, bathrooms, living rooms, bedrooms or hallways.*
4. *Common use areas covered by this section shall be accessible as required by this chapter. Public use areas as defined in Chapter 2 of this code are subject to provisions of the Division of the State Architect (DSA-AC) and are referenced in Section 1.9.1.1.*

The minimum number of multifamily dwelling units which must comply with this section shall be calculated using the total number of all multistory dwelling units in buildings on a site which are subject to this section. Any fraction thereof shall be rounded to the next highest whole number.

1102A.3.2 Multistory dwelling units in buildings with one or more elevators. *Multistory dwelling units contained in buildings with elevators shall comply with this section. For multistory dwelling units in buildings with elevators, the story of the unit that is served by the building elevator is considered a ground floor and the primary entry floor to the unit and shall comply with the following:*

1. *At least 1 powder room or bathroom shall be located on the primary entry level.*
2. *At least 1 kitchen shall be located on the primary entry level.*
3. *All rooms or spaces located on the primary entry level shall be served by an accessible route and shall comply with Division IV.*

1102A.4 Temporary restrictions. *During periods of partial or restricted use of a building or facility, the entrances used for primary access shall be accessible to and usable by persons with disabilities.*

SECTION 1103A—DESIGN AND CONSTRUCTION

1103A.1 General. *When buildings are required to be accessible, they shall be designed and constructed as provided in this chapter.*

SECTION 1104A—COVERED MULTIFAMILY DWELLINGS

1104A.1 General. *All ground-floor dwelling units in nonelevator buildings shall be adaptable and on an accessible route, unless an accessible route is not required as determined by site impracticality provisions in Section 1150A. For buildings with elevators, see Section 1106A.*

Multistory dwelling units shall comply with Section 1102A.3.

1104A.2 Ground floors above grade. *Where the first floor containing dwelling units in a building is above grade, all units on that floor shall be served by an accessible route. This floor will be considered a ground floor and all dwelling units are considered covered multifamily dwelling units.*

Exception: *Carriage units as defined in Chapter 2 and regulated only by the Department of Housing and Community Development as referenced in Section 1.8.2.1.2.*

Multistory dwelling units shall comply with Section 1102A.3.

SECTION 1105A—GARAGES, CARPORTS AND PARKING FACILITIES

1105A.1 General. *Garages, carports and other parking facilities, which are accessory to covered multifamily dwelling units, shall be accessible as required in Section 1109A.*

SECTION 1106A—SITE AND BUILDING CHARACTERISTICS

1106A.1 General. *Covered multifamily dwellings with elevators shall be designed and constructed to provide at least one accessible entrance on an accessible route, regardless of terrain or unusual characteristics of the site. Covered multifamily dwellings without elevators shall be designed and constructed to provide at least one accessible entrance on an accessible route unless terrain or unusual characteristics of the site prevent an accessible route based on the conditions listed below:*

1. ***Accessible entrance.*** *Regardless of site considerations described in Section 1150A, an accessible entrance on an accessible route is required when there is an elevator connecting the parking area with the dwelling units on a ground floor. (In this case, those dwelling units on the ground floor served by an elevator and at least one of each type of public- and common-use areas, would be subject to these requirements.)*
2. ***Elevator building.*** *When a building elevator or elevators are provided as a means of access to dwelling units other than dwelling units on a ground floor (see Section 1104A.2), the building is an elevator building. All dwelling units become covered multifamily dwellings in that building. The elevator in that building must provide accessibility to all dwelling units in the building, regardless of the slope of the natural terrain. For multistory dwelling units in buildings with one or more elevators, see Section 1102A.3.2.*

   Note: *Where a building elevator is provided only as means of creating an accessible route to covered multifamily dwelling units on a ground floor, the building is not considered to be an elevator building, only dwelling units located on the ground floor shall be required to comply with this chapter.*
3. ***Elevated walkway.*** *When an elevated walkway is planned between a building entrance and a vehicular or pedestrian arrival point and the planned walkway has a slope no greater than 10 percent (1 unit vertical in 10 units horizontal), the floor being served by the elevated walkway becomes a ground floor and accessibility to all dwellings on that ground floor is required.*

   Note: *Since the planned walkway meets the 10 percent slope criterion, it is required to provide an accessible route to the entrance and the slope of the walkway must be reduced to 1 unit vertical in 12 units horizontal (8.33 percent slope) maximum.*

1106A.2 Site impracticality. *For tests to determine site impracticality due to terrain considerations in nonelevator buildings, see Section 1150A.*

SECTION 1107A—DEFINITIONS

All definitions are located in Chapter 2.

DIVISION II – EXTERIOR FACILITIES

Division II Table of Contents

Section 1108A General Requirements for Accessible Parking and Exterior Routes of Travel

Section 1109A Parking Facilities

Section 1110A Exterior Accessible Routes

Section 1111A Changes in Level on Accessible Routes

Section 1112A Curb Ramps on Accessible Routes

Section 1113A Walks and Sidewalks on Accessible Routes

Section 1114A Exterior Ramps and Landings on Accessible Routes

Section 1115A Exterior Stairways

Section 1116A Hazards on Accessible Routes

SECTION 1108A—GENERAL REQUIREMENTS FOR ACCESSIBLE PARKING AND EXTERIOR ROUTES OF TRAVEL

Note: *In addition to provisions of this division, exterior routes of travel that provide access to, or egress from, buildings for persons with disabilities shall also comply with Chapter 10.*

SECTION 1109A—PARKING FACILITIES

1109A.1 Accessible parking required. *Each parking facility provided for covered multifamily dwellings and facilities (e.g., swimming pools, club houses, recreation areas and laundry rooms) that serve covered multifamily dwellings shall provide accessible parking as required by this section.*

1109A.2 Parking facilities. *Parking facilities shall include, but not be limited to, the following:*

1. *Garages*
2. *Private garages*
3. *Carports*
4. *Off-street parking (parking lots/spaces)*

1109A.2.1 Private garages. *Private garages accessory to covered multifamily dwelling units, shall be accessible as required in Section 1109A. Private garages include individual garages and multiple individual garages grouped together.*

Exception: *A private garage attached to and directly serving a single covered multifamily dwelling unit providing at least one of the following options:*

1. *A door leading directly from the covered dwelling unit, which immediately enters the garage. The door shall comply on both sides with Sections 1132A.3 through 1132A.9.*
2. *An accessible route of travel from the covered dwelling unit to an exterior door entering the garage. See Section 1132A.1 for requirements at both exit doors.*
3. *An accessible route of travel from the dwelling unit's primary entry door to the vehicular entrance at the garage. See Section 1132A.1 for requirements at the primary entry door.*

1109A.3 Required accessible parking spaces. *Accessible parking spaces shall be provided at a minimum rate of 2 percent of the covered multifamily dwelling units. At least one space of each type of parking facility shall be made accessible even if the total number exceeds 2 percent.*

1109A.4 Assigned accessible parking spaces. *When assigned parking spaces are provided for a resident or a group of residents, at least 2 percent of the assigned parking spaces serving covered multifamily dwelling units shall be accessible in each type of parking facility. At least one space of each type of parking facility shall be made accessible even if the total number exceeds 2 percent. When assigned parking is provided, signage as required by Section 1109A.8.8 shall not be required.*

1109A.5 Unassigned and visitor parking spaces. *When parking is provided for covered multifamily dwellings and is not assigned to a resident or a group of residents at least 5 percent of the parking spaces shall be accessible and provide access to grade-level entrances of covered multifamily dwellings and facilities (e.g., swimming pools, club houses, recreation areas and laundry rooms) that serve covered multifamily dwellings. Accessible parking spaces shall be provided with signage as required by Section 1109A.8.8. Such signage shall not be blocked from view by a vehicle parked in the space.*

1109A.6 Requests for accessible parking spaces. *When assigned parking is provided, designated accessible parking for the dwelling unit shall be provided on request of residents with disabilities on the same terms and with the full range of choices (e.g., off-street parking, carport or garage) that are available for other residents.*

1109A.7 Location of accessible parking spaces. *The location of accessible parking spaces shall comply with the following:*

1. *Accessible parking spaces shall be located on the shortest possible accessible route to an accessible building, or covered multifamily dwelling unit entrance. All van accessible spaces may be grouped on one level of a multilevel parking facility.*
2. *When parking facilities are located adjacent to a building with multiple accessible entrances, accessible parking spaces shall be dispersed and located near the accessible building entrances.*

3. *When practical, the accessible route shall not cross lanes for vehicular traffic. When crossing vehicle traffic lanes is necessary, the accessible route shall be designated and marked as a crosswalk.*
4. *Parking facilities that do not serve a particular building shall have accessible parking spaces located on the shortest possible accessible route to an accessible pedestrian entrance of the parking facility.*
5. *Accessible parking spaces shall be located so that persons with disabilities are not compelled to wheel or walk behind parked cars other than their own.*

   ***Exception:** When the enforcement agency determines that compliance with this section or providing equivalent facilitation would create an unreasonable hardship, parking spaces may be provided which would require a person with physical disabilities to wheel or walk behind other than accessible parking spaces.*

1109A.8 Design and construction. *Accessible parking required by this section shall be designed and constructed in accordance with Section 1109A.*

1109A.8.1 Vertical clearances. *All entrances, exits and vehicular passageways to and from required accessible parking spaces within parking facilities, shall have a minimum vertical clearance of 8 feet 2 inches (2489 mm) from the floor to the lowest projection of the ceiling. Reflective warning signs complying with Section 1143A for character height shall be installed at transitions from the 8 feet 2 inch ceiling to lower ceiling heights in vehicular passageways in the same parking level.*

1109A.8.2 Arrangement of parking spaces. *Parking spaces shall be arranged to comply with the following:*

1. *In each parking area, a bumper or curb shall be provided and located to prevent encroachment of cars over the required width of walkways.*
2. *Ramps, including curb ramps, shall not encroach into any accessible parking space or the adjacent loading and unloading access aisle.*

1109A.8.3 Slope of accessible parking spaces and access aisles. *Surface slopes of accessible parking spaces and access aisles shall be the minimum possible and shall not exceed $^1/_4$ inch (6.35 mm) per foot (2.083-percent gradient) in any direction.*

1109A.8.4 Accessible parking space size. *Accessible parking spaces shall comply with Sections 1109A.8.5 and 1109A.8.6.*

1109A.8.5 Accessible single parking space. *Where accessible single spaces are provided, they shall be constructed in accordance with the following:*

1. *Single spaces shall be 14 feet (4267 mm) wide minimum, and shall provide a 9-foot (2743 mm) wide parking area and a 5-foot (1524 mm) wide loading and unloading access aisle. Access aisles shall be permitted to be located on either side of the vehicle, and shall extend the full required length of the parking spaces they serve.*
2. *When more than one space is provided, two 9-foot (2743 mm) wide parking spaces may be lined on each side of a 5-foot (1524 mm) wide loading and unloading access aisle.*
3. *The minimum length of each parking space shall be 18 feet (5486 mm).*
4. *The loading and unloading access aisle shall be marked by a border painted blue. Within the blue border, hatched lines a maximum of 36 inches (914 mm) on center shall be painted a color contrasting with the parking surface, preferably blue or white. The words "NO PARKING" shall be painted on the ground within each 5-foot (1524 mm) wide loading and unloading access aisle. This notice shall be painted in white letters no less than 12 inches (305 mm) high and located so that it is visible from the adjacent vehicular way.*

   ***Note:** See Figures 11A-2A, 11A-2B and 11A-2C.*

1109A.8.6 Van accessible parking space. *One in every eight accessible spaces, but not less than one, shall be van accessible and shall be constructed in accordance with the following:*

1. *Each van-accessible parking space shall be 17 feet (5181 mm) wide minimum, and shall provide either of the following:*
   1.1. *A 12-foot (3658 mm) wide minimum parking area and a 5-foot (1524 mm) wide minimum loading and unloading access aisle.*
   1.2. *A 9-foot (2743 mm) wide minimum parking area and an 8-foot (2438 mm) wide minimum loading and unloading access aisle.*

   Access aisles shall be located on the passenger side of the vehicle with the vehicle parked in the forward position, and shall extend the full required length of the parking spaces they serve.
2. *The minimum length of each space shall be 18 feet (5486 mm).*
3. *Each space shall be designated "van accessible" as required by Section 1109A.8.8.*
4. *All van accessible spaces may be grouped on one level of a multilevel parking facility.*
5. *The loading and unloading access aisle shall be marked by a border painted blue. Within the blue border, hatched lines a maximum of 36 inches (914 mm) on center shall be painted a color contrasting with the parking surface, preferably blue or white. The words "NO PARKING" shall be painted on the ground within each loading and unloading access aisle. This notice shall be painted in white letters no less than 12 inches (305 mm) high and located so that it is visible from the adjacent vehicular way.*

   ***Note:** See Figures 11A-2A, 11A-2B and 11A-2C.*

1109A.8.7 Adjacent parking. *Parking spaces adjacent to accessible parking spaces shall not be considered as loading and unloading access aisles.*

1109A.8.8 Identification. *Each accessible parking space shall be identified with signage and surface marking in accordance with Sections 1109A.8.8.1 and 1109A.8.8.2.*

1109A.8.8.1 Parking signage. *Each accessible parking space reserved for persons with disabilities shall be identified by a reflective sign consisting of the "International Symbol of Accessibility" complying with Section 1143A.8. The sign shall not be smaller than 70 square inches (4516 mm^2) in area, and shall be posted 60 inches minimum above the finish floor or ground surface, measured to the bottom of the sign. Signs located on accessible routes shall be posted at a minimum height of 80 inches (2032 mm) above the finish floor or ground surface of the accessible route, measured to the bottom of the sign.*

Signs identifying accessible parking spaces shall be visible from each parking space they serve, and shall be permanently posted immediately adjacent to the parking space or within the projected parking space width at the head end of the parking space. Signs may also be permanently posted on a wall at the interior end of the parking space.

Van accessible spaces shall comply with Section 1109A.8.6 and shall have an additional sign or additional language stating "Van Accessible" below the symbol of accessibility.

An additional sign shall also be posted in a conspicuous place at each entrance to off-street parking facilities or immediately adjacent to and visible from each accessible stall or space. The sign shall not be less than 17 inches (432 mm) by 22 inches (559 mm) in size with lettering not less than 1 inch (25.4 mm) in height, and shall clearly and conspicuously state the following:

"Unauthorized vehicles parked in designated accessible spaces not displaying distinguishing placards or special license plates issued for persons with disabilities will be towed away at the owner's expense. Towed vehicles may be reclaimed at _____ or by telephoning_____."

Blank spaces are to be filled in with appropriate information as a permanent part of the sign.

1109A.8.8.2 Parking space marking. *In addition to the signage requirements, each accessible parking space shall have a surface identification complying with either of the following:*

1. *The parking space shall be outlined or painted blue, and shall be marked with the "International Symbol of Accessibility" in white or a suitable contrasting color. The "International Symbol of Accessibility" shall be 36 inches (914 mm) wide by 36 inches (914 mm) high minimum, with the centerline 6 inches (152 mm) maximum from the centerline of the parking space, its sides parallel to the length of the parking space, and its lower side aligned with the end of the parking space.*
2. *The parking space shall be marked with the "International Symbol of Accessibility", in white on a blue background, 36 inches (914 mm) wide by 36 inches (914 mm) high minimum in size. The centerline of the "International Symbol of Accessibility" shall be 6 inches (152 mm) maximum from the centerline of the parking space, its sides shall be parallel to the length of the parking space, and its lower side shall be aligned with the end of the parking space length.*

Note: *See Figures 11A-2A, 11A-2B and 11A-2C.*

SECTION 1110A—EXTERIOR ACCESSIBLE ROUTES

1110A.1 General. *When a building or portion of a building is required to be accessible or adaptable, an accessible route shall be provided to all portions of the building, accessible building entrances and between the building and the public way. The accessible route shall be the most practical direct route and to the maximum extent feasible, coincide with the route for the general public and building residents.*

Exterior accessible routes shall be provided as follows:

1. *At least one accessible route within the boundary of the site shall be provided from public transportation stops, accessible parking and accessible passenger loading and unloading zones, and public streets or sidewalks to the accessible building entrance they serve. Where more than one route of travel is provided, all routes shall be accessible.*
2. *At least one accessible route shall connect accessible buildings, facilities, elements and spaces that are on the same site. Accessible routes shall be provided between accessible buildings and accessible site facilities when more than one building or facility is located on a site.*
3. *At least one accessible route shall connect accessible building or facility entrances with all accessible spaces, elements and covered multifamily dwelling units.*
4. *An accessible route shall connect at least one accessible entrance of each covered multifamily dwelling unit with exterior spaces and facilities that serve the dwelling unit.*
5. *Where elevators are provided for vertical access, all elevators shall be accessible. See Section 1124A.*

   Note: *If the slope of the finished grade between covered multifamily dwellings and site arrival points, public use or common use facilities (including parking) exceeds 1 unit vertical in 12 units horizontal (8.33-percent slope), or where other physical barriers (natural or artificial) or legal restrictions, all of which are outside the control of the owner, prevent the installation of an accessible route, an acceptable alternative is to provide access by a vehicular route, provided:*

   1. *There is accessible parking on an accessible route for at least 2 percent of the covered multifamily dwelling units, and*
   2. *Necessary site provisions such as parking spaces and curb ramps are provided at the public use or common use facility.*

1110A.2 Signs. *At every primary public entrance and at every major junction where the accessible route diverges from the circulation path along or leading to an accessible route, entrance or facility, there shall be a sign displaying the "International Symbol of*

Accessibility." Signs shall indicate the direction to accessible building entrances and facilities and shall comply with the requirements found in Section 1143A.

1110A.3 Floor and ground surfaces. *Floor and ground surfaces shall be stable, firm and slip resistant. If carpet or carpet tile is used in a common-use area or public-use area on a ground or floor surface, it shall have firm backing or no backing. Carpet or carpet tile shall have a level loop, textured loop, level cut pile or level cut/uncut pile texture. The maximum pile height shall be $^1/_2$ inch (12.7 mm). Exposed edges of carpet shall be fastened to floor surfaces and have trim along the entire length of the exposed edge. Carpet edge trim shall comply with Section 1111A requirements for changes in level.*

1110A.3.1 Recessed doormats. *Recessed doormats shall be adequately anchored to prevent interference with wheelchair traffic.*

1110A.4 Exterior accessible routes over 200 feet. *Exterior accessible routes that exceed 200 feet (60 960 mm) in length shall comply with Section 1138A.1.2. (See Figure 11A-1L)*

SECTION 1111A—CHANGES IN LEVEL ON ACCESSIBLE ROUTES

1111A.1 Changes in level not exceeding $^1/_2$ inch. *Abrupt changes in level along any accessible route shall not exceed $^1/_2$ inch (12.7 mm). When changes in level do occur, they shall be beveled with a slope no greater than 1 unit vertical in 2 units horizontal (50-percent slope). Changes in level not exceeding $^1/_4$ inch (6.35 mm) may be vertical.*

1111A.2 Changes greater than $^1/_2$ inch. *Changes in level greater than $^1/_2$ inch (12.7 mm) shall be made by means of a sloped surface not greater than 1 unit vertical in 20 units horizontal (5-percent slope), or a curb ramp, ramp, elevator or platform (wheelchair) lift. Stairs shall not be part of an accessible route. When stairs are located along or adjacent to an accessible route they shall comply with Section 1115A for exterior stairways.*

SECTION 1112A—CURB RAMPS ON ACCESSIBLE ROUTES

1112A.1 General. *Curb ramps within the boundary of the site shall be constructed at each corner of street intersections and where a pedestrian way crosses a curb. The preferred and recommended location for curb ramps is in the center of the crosswalk of each street corner. Where it is necessary to locate a curb ramp in the center of the curb return, the street surfaces shall be marked to identify pedestrian crosswalks, and the lower end of the curb ramp shall terminate within such crosswalk areas. Curb ramps do not require handrails.*

1112A.2 Obstructions. *Curb ramps shall be located or protected to prevent obstruction by parked cars. Built-up curb ramps shall be located so that they do not project into vehicular traffic lanes, parking spaces or the adjacent loading and unloading access aisle.*

1112A.3 Width of curb ramps. *Curb ramps shall be a minimum of 48 inches (1219 mm) in width.*

1112A.4 Diagonal curb ramps. *If diagonal (or corner-type) curb ramps have returned curbs or other well-defined edges, such edges shall be parallel to the direction of pedestrian flow. The bottom of diagonal curb ramps shall have a 48-inch (1219 mm) minimum clear space as shown in Figures 11A-3A through 11A-3L. If diagonal curb ramps are provided at marked crossings, the 48-inch (1219 mm) clear space shall be within the markings (see Figures 11A-3A through 11A-3L). If diagonal curb ramps have flared sides, they shall also have at least a 24-inch-long (610 mm) segment of straight curb located on each side of the curb ramp and within the marked crossing. See Figures 11A-3A through 11A-3L.*

1112A.5 Slope of curb ramps. *The slope of curb ramps shall not exceed 1 unit vertical to 12 units horizontal (8.33-percent slope) and shall lie, generally, in a single sloped plane. Transitions from ramps to walks, gutters or streets shall be flush and free of abrupt changes. Maximum slopes of adjoining gutters, road surface immediately adjacent to the curb ramp, or accessible route shall not exceed 1 unit vertical to 20 units horizontal (5-percent slope) within 4 feet (1219 mm) of the top and bottom of the curb ramp.*

If a curb ramp is located where pedestrians must walk across the ramp, then it shall have flared sides; the maximum slope of the flare shall be 1 unit vertical in 10 units horizontal (10-percent slope). Curb ramps with returned curbs may be used where pedestrians would not normally walk across the ramp. See Figures 11A-3A through 11A-3L.

1112A.6 Level landing. *A level landing 48 inches (1219 mm) deep shall be provided at the upper end of each curb ramp over its full width to permit safe egress from the ramp surface, or the slope of the fanned or flared sides of the curb ramp, shall not exceed 1 unit vertical to 12 units horizontal (8.33-percent slope).*

1112A.7 Finish. *The surface of each curb ramp and its flared sides shall be stable, firm and slip-resistant and shall be of contrasting finish from that of the adjacent sidewalk.*

1112A.8 Border. *All curb ramps shall have a grooved border 12 inches (305 mm) wide at the level surface of the sidewalk along the top and each side approximately $^3/_4$ inch (19 mm) on center. All curb ramps constructed between the face of the curb and the street shall have a grooved border at the level surface of the sidewalk. See Figures 11A-3A through 11A-3K.*

1112A.9 Detectable warnings. *See Chapter 11B.*

SECTION 1113A—WALKS AND SIDEWALKS ON ACCESSIBLE ROUTES

1113A.1 Width and continuous surface. *Walks and sidewalks subject to this chapter shall have a continuous common surface, not interrupted by steps or by abrupt changes in level exceeding $^1/_2$ inch (12.7 mm). (See Section 1111A).*

Walking surfaces shall be stable, firm and slip resistant, and shall comply with Section 1110A.3.

1113A.1.1 Width. *Walks and sidewalks shall be a minimum of 48 inches (1219 mm) in width, except that walks serving an individual dwelling unit in covered multifamily buildings may be reduced to 36 inches (914 mm) in clear width except at doors.*

1113A.1.2 Surface cross slopes. *Surface cross slopes shall not exceed 1 unit vertical in 48 units horizontal (2.083-percent slope).*

1113A.2 Walks with continuous gradients. *All walks on an accessible route with continuous gradients shall have level areas at least 60 inches (1524 mm) in length at intervals of at least every 400 feet (122 m).*

1113A.3 Five percent gradient. *When the slope in the direction of travel of any walk on an accessible route exceeds 1 unit vertical in 20 units horizontal (5-percent slope), it shall comply with the ramp provisions of Section 1114A.*

1113A.4 Level areas. *Walks on an accessible route shall be provided with a level area at each side of a door or gate. Level areas shall comply with the applicable requirements for maneuvering clearances in Section 1126A.3.*

1113A.5 Gratings. *Walks, sidewalks and pedestrian ways on an accessible route shall be free of gratings whenever possible. Gratings located in the surface of any of these areas, grid openings in gratings shall be limited to $^1/_2$ inch (12.7 mm) in the direction of traffic. Elongated openings in gratings shall be placed so that the long dimension is perpendicular to the dominant direction of traffic.*

Exceptions:

1. *Where the enforcement agency determines that compliance with this section would create an unreasonable hardship, an exception may be granted when equivalent facilitation is provided.*
2. *This section shall not apply in those conditions where, due to legal or physical constraints, all or portions of the site of the project will not allow compliance with these building standards or equivalent facilitation on all or portions of one site without creating an unreasonable hardship.*

1113A.6 Handrails. *Handrails provided along walking surfaces with running slopes not steeper than one unit vertical in 20 units horizontal (5-percent slope) shall comply with Section 1114A.6.*

SECTION 1114A—EXTERIOR RAMPS AND LANDINGS ON ACCESSIBLE ROUTES

1114A.1 Width. *The clear width of ramps shall be consistent with the requirements in Chapter 10 of this code, but in no case shall be less than 48 inches (1219 mm)*

Handrails may project into the required clear width of the ramp at each side 3 $^1/_2$ inches (89 mm) maximum at the handrail height. Curbs, wheel guides and/or appurtenances shall not project into the required clear width of ramps.

Exception: *The clear width of ramps serving accessible entrances to covered multifamily dwellings with an occupant load of 10 or less may be 36 inches (914 mm) minimum between handrails.*

Note: *See Section 1114A.6.2.4 for handrail projections.*

1114A.2 Slope. *The maximum slope of ramps on an accessible route shall be no greater than 1 unit vertical in 12 units horizontal (8.33-percent slope). Transitions from ramps to walks, gutters or streets shall be flush and free of abrupt changes.*

Exception: *Ramps serving decks, patios or balconies as specified in Section 1132A.4.*

1114A.2.1 Cross slope. *The cross slope of ramp surfaces shall be no greater than 1 unit vertical in 48 units horizontal (2.083-percent slope).*

1114A.3 Outdoor ramps. *Outdoor ramps, ramp landings and their approaches shall be designed so that water will not accumulate on the walking surface.*

1114A.4 Landings. *Ramp landings shall be level and comply with this section.*

1114A.4.1 Location of landings. *Landings shall be provided at the top and bottom of each ramp. Intermediate landings shall be provided at intervals not exceeding 30 inches (762 mm) of vertical rise and at each change of direction. Landings are not considered in determining the maximum horizontal distance of each ramp.*

Note: *Examples of ramp dimensions are:*

SLOPE (Grading %)	MAXIMUM RISE (Inches)	MAXIMUM HORIZONTAL PROJECTION (Feet)
	(x 25.4 for mm)	(x 304.8 for mm)
1:12 (8.33%)	30	30
1:15 (6.67%)	30	37.5
1:16 (6.25%)	30	40
1:20 (5.00%)	30	50

1114A.4.2 Size of top landings. *Top landings shall not be less than 60 inches (1524 mm) wide. Top landings shall have a minimum length of not less than 60 inches (1524 mm) in the direction of the ramp run. See Section 1126A.3 for maneuvering clearances at doors.*

1114A.4.3 Size of bottom and intermediate landings. *The minimum width of bottom and intermediate landings shall not be less than the width of the ramp.*

Intermediate landings shall have a length in the direction of ramp run of not less than 60 inches (1524 mm). Bottom landings shall have a length in the direction of ramp run of not less than 72 inches (1829 mm).

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1114A.4.4 Encroachment of doors. *Doors in any position shall not reduce the minimum dimension of the landing to less than 42 inches (1067 mm) and shall not reduce the required width by more than 3 inches (76.2 mm) when fully open. (See Figure 11A-6D).*

1114A.4.5 Strike edge extension. *The width of the landing shall comply with Section 1126A.3 for strike edge extension and maneuvering clearance at doors.*

Where doorways are located adjacent to a ramp landing, maneuvering clearance required by Section 1126A.3 shall be permitted to overlap the required landing area.

1114A.4.6 Change of direction. *Intermediate landings at a change of direction shall be sized to provide 60 inches turning space complying with Section 1138A.1.3. Intermediate landings at a change of direction in excess of 30 degrees shall have a length in the direction of ramp run of not less than 72 inches (1829 mm). (See Figures 11A-6C and 11A-6D.)*

1114A.5 Ramp height. *Ramps more than 30 inches (762 mm) above the adjacent floor or ground and open on one or both sides shall be provided with guardrails as required by Section 1013. Guardrails shall be continuous from the top of the ramp to the bottom of the ramp.*

1114A.6 Ramp handrails.

1114A.6.1 Where required. *Handrails shall be provided at each side of ramps when the slope exceeds 1 unit vertical in 20 units horizontal (5-percent slope).*

Exceptions:

1. *Curb ramps.*
2. *Ramps that serve an individual dwelling unit may have one handrail, except that ramps open on one or both sides shall have handrails provided on the open side or sides.*
3. *Ramps at exterior door landings with less than 6 inches (152 mm) rise or less than 72 inches (1829 mm) in length.*

1114A.6.2 Handrail configuration.

1114A.6.2.1 Handrail heights. *The top of handrails shall be 34 to 38 inches (864 to 965 mm) above the ramp surface.*

1114A.6.2.2 Handrail continuity. *Handrails on all ramps shall be continuous within the full length of each ramp run. Inside handrails on switchback or dogleg ramps shall be continuous between ramp runs.*

1114A.6.2.3 Handrail extensions. *Handrails shall extend a minimum of 12 inches (305 mm) horizontally above landings, beyond the top and bottom of the ramp runs. Extensions shall return to a wall, guard or the walking surface, or shall be continuous to the handrail of an adjacent ramp run. Handrail extensions shall be in the same direction as the ramp runs. (See Figure 11A-5A.)*

1114A.6.2.4 Handrail projections. *Handrails projecting from a wall shall have a space of $1^1/_2$ inches (38.1 mm) minimum between the wall and the handrail.*

Handrails may be located in a recess if the recess is a maximum of 3 inches (76.2 mm) deep and extends at least 18 inches (457 mm) above the top of the rail. Any wall or other surface adjacent to the handrail shall be free of sharp or abrasive elements. (See Figure 11A-6B.)

1114A.6.2.5 Handrail gripping surfaces. *Handrail gripping surfaces shall be continuous along their length, and shall not be obstructed along their tops or sides. The bottoms of handrail gripping surfaces shall not be obstructed for more than 20 percent of their length. When provided, horizontal projections shall occur $1^1/_2$ inches (38 mm) minimum below the bottom of the handrail gripping surface. The distance between horizontal projections and the bottom of the gripping surface shall be permitted to be reduced by $^1/_8$ inch (3.2 mm) for each $^1/_2$ inch (12.7 mm) of additional handrail perimeter dimension that exceeds 4 inches (102 mm).*

Handrail gripping surfaces and any surfaces adjacent to them shall be free of sharp or abrasive elements, and shall have rounded edges.

Exception: *Where handrails are provided along walking surfaces with slopes not steeper than 1 unit vertical in 20 units horizontal, the bottoms of handrail gripping surfaces shall be permitted to be obstructed along their entire length where they are integral to crash rails or bumper guards.*

1114A.6.2.6 Cross section. *Handrail gripping surfaces shall comply with this section, or the shape shall provide equivalent gripping surface.*

1. ***Circular cross section.*** *The handrail gripping surfaces with a circular cross section shall not be less than $1^1/_4$ inches (31.75 mm) nor more than 2 inches (50.8 mm) in cross-sectional dimension.*
2. ***Noncircular cross section.*** *Handrail gripping surfaces with a noncircular cross section shall have a perimeter dimension of 4 inches (102 mm) minimum and $6^1/_4$ inches (159 mm) maximum, and a cross-section dimension of $2^1/_4$ inches (57 mm) maximum.*

1114A.6.2.7 Fittings. *Handrails shall not rotate within their fittings.*

1114A.7 Edge protection. *Ramps and ramp landings shall be provided with a continuous and uninterrupted barrier on each side along the entire length in compliance with ramp provisions located in Chapter 10. (See Figure 11A-5A.)*

Note: *Extended floors or ground surfaces, as permitted in Chapter 10, are not allowed for ramps and ramp landings part of an accessible route.*

SECTION 1115A—EXTERIOR STAIRWAYS

1115A.1 General. *Exterior stairways serving buildings on a site containing covered multifamily dwelling units shall comply with this section.*

1115A.2 Open risers. *Open risers are not permitted on exterior stairways.*

Exceptions:

1. *An opening of not more than $^1/_2$ inch (12.7 mm) may be permitted between the base of the riser and the tread.*
2. *Risers constructed of grating containing openings of not more than $^1/_2$ inch (12.7 mm) may be permitted.*

1115A.3 Treads. *All tread surfaces shall be stable, firm and slip resistant, and shall comply with Section 1110A.3. Treads shall have smooth, rounded or chamfered exposed edges, and no abrupt edges at the nosing (lower front edge).*

1115A.4 Nosing. *Nosing shall not project more than $1^1/_4$ inches (31.8 mm) past the face of the riser below. Risers shall be sloped or the underside of the nosing shall have an angle not more than 30 degrees (0.52 rad) from the vertical. (See Figure 11A-6A).*

1115A.5 Striping for the visually impaired. *Exterior stairs serving buildings on a site containing multifamily dwelling units shall have the upper approach and all treads marked by a stripe providing clear visual contrast.*

The stripe shall be a minimum of 2 inches (50.8 mm) wide to a maximum of 4 inches (101.6 mm) wide placed parallel to, and not more than 1 inch (25.4 mm) from, the nose of the step or upper approach. The stripe shall extend the full width of the step or upper approach and shall be of material that is at least as slip resistant as the other treads of the stair. A painted stripe shall be acceptable. Grooves shall not be used to satisfy this requirement.

1115A.6 Exterior stairway handrails.

1115A.6.1 Where required. *Stairways shall have handrails on each side. Intermediate handrails shall be located equidistant from the sides of the stairway and comply with Section 1014.9.*

Exception: *Stairways serving an individual dwelling unit may have one handrail, except that stairways open on one or both sides shall have handrails on the open side or sides.*

1115A.6.2 Handrail configuration.

1115A.6.2.1 Handrail heights. *The top of handrails shall be 34 to 38 inches (864 to 965 mm) above the nosing of the treads.*

1115A.6.2.2 Handrail continuity. *Handrails on all stairways shall be continuous within the full length of each stair flight. Inside handrails on switchback or dogleg stairs shall be continuous between stair flights.*

1115A.6.2.3 Handrail extensions. *At the top of stair flights, handrails shall extend a minimum of 12 inches (305 mm) horizontally above landings, beginning directly above the first riser nosing. Extensions shall return to a wall, guard or the walking surface, or shall be continuous to the handrail of an adjacent stair flight.*

At the bottom of stair flights, handrails shall extend at the slope of the stair flight for a distance equal to one tread depth beyond the last riser nosing. Such extension shall continue with 12 inches (305 mm) minimum horizontal extension, shall be continuous to the handrail of an adjacent stair flight, or shall return to a wall, guard or the walking surface. Handrail horizontal extensions shall be in the same direction as the stair flights. (See Figures 11A-6A and 11A-6E.)

1115A.6.2.4 Handrail projections. *Handrails projecting from a wall shall have a space of $1^1/_2$ inches (38.1 mm) minimum between the wall and the handrail.*

Handrails may be located in a recess if the recess is a maximum of 3 inches (76.2 mm) deep and extends at least 18 inches (457 mm) above the top of the rail. Any wall or other surface adjacent to the handrail shall be free of sharp or abrasive elements. (See Figure 11A-6B.)

1115A.6.2.5 Handrail gripping surfaces. *Handrail gripping surfaces shall be continuous along their length, and shall not be obstructed along their tops or sides. The bottoms of handrail gripping surfaces shall not be obstructed for more than 20 percent of their length. When provided, horizontal projections shall occur $1^1/_2$ inches (38.1 mm) minimum below the bottom of the handrail gripping surface. The distance between horizontal projections and the bottom of the gripping surface shall be permitted to be reduced by $^1/_8$ inch (3.2 mm) for each $^1/_2$ inch (12.7 mm) of additional handrail perimeter dimension that exceeds 4 inches (102 mm).*

Handrail gripping surfaces and any surfaces adjacent to them shall be free of sharp or abrasive elements, and shall have rounded edges.

1115A.6.2.6 Cross section. *Handrail gripping surfaces shall comply with this section, or the shape shall provide equivalent gripping surface.*

1. ***Circular cross section.*** *Handrail gripping surfaces with a circular cross section shall not be less than $1^1/_4$ inches (31.75 mm) nor more than 2 inches (50.8 mm) in cross-sectional dimension.*
2. ***Noncircular cross section.*** *Handrail gripping surfaces with a noncircular cross section shall have a perimeter dimension of 4 inches (102 mm) minimum and $6^1/_4$ inches (159 mm) maximum, and a cross-section dimension of $2^1/_4$ inches (57 mm) maximum.*

1115A.6.2.7 Fittings. *Handrails shall not rotate within their fittings.*

SECTION 1116A—HAZARDS ON ACCESSIBLE ROUTES

1116A.1 Warning curbs. *Abrupt changes in level exceeding 4 inches (101.6 mm) in vertical dimension, such as changes in level at planters or fountains located in or adjacent to walks, sidewalks or other pedestrian ways shall be identified by curbs or other approved barriers projecting at least 6 inches (152.4 mm) in height above the walk or sidewalk surface to warn the blind of a potential drop-off.*

Exceptions:

1. *Between a walk or sidewalk and an adjacent street or driveway.*
2. *When a guardrail or handrail is provided with edge protection in accordance with Section 1012.10.1.*

1116A.2 Headroom clearance. *Walks, pedestrian ways, and other circulation spaces, which are part of the required egress system, shall have a minimum clear headroom as required in Section 1003.2. Other walks, pedestrian ways and circulation spaces shall have a minimum clear headroom of 80 inches (2032 mm). If the vertical clearance of an area adjoining an accessible route is reduced to less than 80 inches (2032 mm), a guardrail or other barrier having its leading edge at or below 27 inches (686 mm) above the finished floor shall be provided.*

Exception: *Doorways and archways less than 24 inches (610 mm) in depth may have a minimum clear headroom of 80 inches (2032 mm). (See Section 1126A for door requirements.)*

1116A.3 Overhanging obstructions. *Any obstruction that overhangs a pedestrian way shall be a minimum of 80 inches (2032 mm) above the walking surface as measured from the bottom of the obstruction. (See Figure 11A-1B.) Where a guy support is used parallel to a path of travel, including, but not limited to, sidewalks, a guy brace, sidewalk guy or similar device shall be used to prevent an overhanging obstruction. (See Section 1116A.2 for required headroom clearance.)*

Exception: *Door closers and door stops shall be permitted to be 78 inches (1981 mm) minimum above the finish floor or ground.*

1116A.4 Free-standing signs. *Wherever signs mounted on posts or pylons protrude from the post or pylons and the bottom edge of the sign is less than 80 inches (2032 mm) above the finished floor or ground level, the edges of such signs shall be rounded or eased and the corners shall have a minimum radius of 0.125 inches (see Section 1116A.2 for required headroom clearance).*

1116A.5 Detectable warnings at vehicular areas. *When a walk crosses or adjoins a vehicular way, the walking surface shall be separated from the vehicular area by curbs, railings or other elements, or the boundary between the pedestrian areas and the vehicular areas shall be defined by a continuous detectable warning 36 inches (914 mm) wide minimum, complying with Chapter 11B, Section 11B-705.*

DIVISION III – BUILDING FEATURES

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SECTION 1117A—GENERAL REQUIREMENTS FOR ACCESSIBLE ENTRANCES, EXITS, INTERIOR ROUTES OF TRAVEL AND FACILITY ACCESSIBILITY

Note: *In addition to provisions of this division, interior routes of travel that provide access to, or egress from, buildings for persons with disabilities shall also comply with Chapter 10.*

1117A.1 General. *When buildings are required to be accessible, building facilities shall be accessible as provided in this division. Where specific floors of a building are required to be accessible, the requirements of this division shall apply only to the facilities located on accessible floors.*

1117A.2 Primary entrances and exterior exit doors. *All primary entrances and exterior ground floor exit doors to buildings and facilities on accessible routes shall be accessible to persons with disabilities.*

1117A.3 Separate dwelling unit entrances. *When a ground-floor dwelling unit of a building has a separate entrance, each such ground-floor dwelling unit shall be served by an accessible route, except where the terrain or unusual characteristics of the site prohibit an accessible route (see Section 1150A for site impracticality tests).*

1117A.4 Multiple entrances. *Only one entrance to covered multifamily buildings is required to be accessible to any one ground floor of a building, except in cases where an individual dwelling unit has a separate exterior entrance. Where the building contains clusters of dwelling units with each cluster sharing a different exterior entrance, more than one entrance may be required to be accessible, as determined by analysis of the site. In every case, the accessible entrance shall be on an accessible route to the covered dwelling units it serves.*

1117A.5 Entrances from parking structures, tunnels or elevated walkways. *Where direct access for pedestrians is provided from a parking structure to a building or facility, each direct access to the building or facility entrance shall be accessible.*

Where direct access for pedestrians is provided from a pedestrian tunnel or elevated walkway to a building or facility, all entrances to the building or facility from each tunnel or walkway shall be accessible.

SECTION 1118A—EGRESS AND AREAS OF REFUGE

1118A.1 General. *Including but not limited to the requirements contained in this chapter for accessible routes, signage and emergency warning systems in buildings or portions of buildings required to be accessible shall be provided with accessible means of egress as required by Chapter 10.*

SECTION 1119A—INTERIOR ACCESSIBLE ROUTES

1119A.1 General. *When a building or portion of a building is required to be accessible or adaptable, an accessible route shall be provided to all portions of the building, accessible building entrances and to covered multifamily dwelling units. The accessible route shall, to the maximum extent feasible, coincide with the route for the general public and other building residents. Accessible routes shall not pass through kitchens, storage rooms, restrooms, closets or other spaces used for similar purposes except within an individual dwelling unit.*

Interior accessible routes shall be provided as follows:

1. *Where more than one route of travel is provided, all routes shall be accessible.*
2. *At least one accessible route shall connect accessible building or facility entrances with all accessible spaces, elements and covered multifamily dwelling units.*
3. *An accessible route shall connect at least one accessible primary entrance of each covered multifamily dwelling unit with interior and exterior spaces and facilities that serve the unit.*
4. *Where elevators are provided for vertical access, all elevators shall be accessible.*

1119A.2 Floor and ground surfaces. *Floor and ground surfaces shall be stable, firm and slip resistant. If carpet or carpet tile is used in a common use area or public use area on a ground or floor surface, it shall have firm backing or no backing. Carpet or carpet tile shall have a level loop, textured loop, level cut pile or level cut/uncut pile texture. The maximum pile height shall be $^1/_2$ inch (12.7 mm). Exposed edges of carpet shall be fastened to floor surfaces and have trim along the entire length of the exposed edge. Carpet edge trim shall comply with Section 1121A requirements for changes in level.*

1119A.2.1 Recessed doormats. *Recessed doormats shall be adequately anchored to prevent interference with wheelchair traffic.*

1119A.3 Widths. *Interior accessible routes serving an occupant load of 10 or more shall not be less than 44 inches (1118 mm) in width. Interior accessible routes serving an occupant load of less than 10 shall not be less than 36 inches (914 mm) in width.*

If a person in a wheelchair must make a turn around a corner or an obstruction, the minimum clear width of the accessible route shall be as specified in Section 1138A.1.5.

1119A.4 Interior accessible routes over 200 feet. *Interior accessible routes that exceed 200 feet (60 960 mm) in length shall comply with Section 1138A.1.2. (See Figure 11A-1L.)*

1119A.5 Changes in elevation. *Interior accessible routes which have changes in elevation shall be transitioned and comply with Sections 1121A or 1122A.*

Exception: *Doors and thresholds as provided in Section 1126A.*

SECTION 1120A—RESERVED

SECTION 1121A—CHANGES IN LEVEL ON ACCESSIBLE ROUTES

1121A.1 Changes in level not exceeding $^1/_2$ inch. *Abrupt changes in level along any accessible route shall not exceed $^1/_2$ inch (12.7 mm). When changes in level do occur, they shall be beveled with a slope no greater than 1 unit vertical in 2 units horizontal (50-percent slope). Changes in level not exceeding $^1/_4$ inch (6.35 mm) may be vertical.*

1121A.2 Changes greater than $^1/_2$ inch. *Changes in level greater than $^1/_2$ inch (12.7 mm) shall be made by means of a sloped surface not greater than 1 unit vertical in 20 units horizontal (5-percent slope), or a curb ramp, ramp, elevator or platform (wheelchair) lift. Stairs shall not be part of an accessible route. When stairs are located along or adjacent to an accessible route they shall comply with Section 1123A for interior stairways.*

SECTION 1122A—INTERIOR RAMPS AND LANDINGS ON ACCESSIBLE ROUTES

1122A.1 Width. *The clear width of ramps shall be consistent with the requirements in Chapter 10 of this code, but in no case shall be less than 48 inches (1219 mm).*

Handrails may project into the required clear width of the ramp at each side $3^1/_2$ inches (89 mm) maximum at the handrail height. Curbs, wheel guides and/or appurtenances shall not project into the required clear width of ramps.

Exception: *The clear width of ramps serving accessible entrances to covered multifamily dwellings with an occupant load of 10 or less may be 36 inches (914 mm) minimum between handrails.*

Note: *See Section 1122A.5.2.4 for handrail projections.*

1122A.2 Slope. *The maximum slope of ramps on an accessible route shall be no greater than 1 unit vertical in 12 units horizontal (8.33-percent slope).*

1122A.2.1 Cross slope. *The cross slope of ramp surfaces shall be no greater than 1 unit vertical in 48 units horizontal (2.083-percent slope).*

1122A.3 Landings. *Ramp landings shall be level and comply with this section. (See Figure 11A-6C.)*

1122A.3.1 Location of landings. *Landings shall be provided at the top and bottom of each ramp. Intermediate landings shall be provided at intervals not exceeding 30 inches (762 mm) of vertical rise and at each change of direction. Landings are not considered in determining the maximum horizontal distance of each ramp.*

Note: *Examples of ramp dimensions are:*

SLOPE (Grading %)	*MAXIMUM RISE (Inches)*	*MAXIMUM HORIZONTAL PROJECTION (Feet)*
	(x 25.4 for mm)	*(x 304.8 for mm)*
1:12 (8.33%)	*30*	*30*
1:15 (6.67%)	*30*	*37.5*
1:16 (6.25%)	*30*	*40*
1:20 (5.00%)	*30*	*50*

1122A.3.2 Size of top landings. *Top landings shall not be less than 60 inches (1524 mm) wide. Top landings shall have a minimum length of not less than 60 inches (1524 mm) in the direction of the ramp run. See Section 1126A.3 for maneuvering clearances at doors. (See Figure 11A-6C.)*

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1122A.3.3 Size of bottom and intermediate landings. *The minimum width of bottom and intermediate landings shall not be less than the width of the ramp.*

Intermediate landings shall have a length in the direction of ramp run of not less than 60 inches (1524 mm).

Bottom landings shall have a length in the direction of ramp run of not less than 72 inches (1829 mm).

1122A.3.4 Encroachment of doors. *Doors in any position shall not reduce the minimum dimension of the landing to less than 42 inches (1067 mm) and shall not reduce the required width by more than 3 inches (76.2 mm) when fully open. (See Figure 11A-6D.)*

1122A.3.5 Strike edge extension*. The width of the landing shall comply with Section 1126A.3 for maneuvering clearance at doors.*

Where doorways are located adjacent to a ramp landing, maneuvering clearance required by Section 1126A.3 shall be permitted to overlap the required landing area.

1122A.3.6 Change of direction*. Intermediate landings at a change of direction shall be sized to provide 60 inches turning space complying with Section 1138A.1.3. Intermediate landings at a change of direction in excess of 30 degrees shall have a length in the direction of ramp run of not less than 72 inches (1829 mm). (See Figures 11A-6C and 11A-6D.)*

1122A.4 Ramp height. *Ramps more than 30 inches (762 mm) above the adjacent floor or ground and open on one or both sides shall be provided with a guard as required by Section 1013. Guardrails shall be continuous from the top of the ramp to the bottom of the ramp.*

1122A.5 Ramp handrails.

1122A.5.1 Where required. *Handrails shall be provided at each side of ramps when the slope exceeds 1 unit vertical in 20 units horizontal (5-percent slope).*

Exceptions:

1. *Curb ramps.*
2. *Ramps that serve an individual dwelling unit may have one handrail, except that ramps open on one or both sides shall have handrails provided on the open side or sides.*

1122A.5.2 Handrail configuration.

1122A.5.2.1 Handrail heights. *The top of handrails shall be 34 to 38 inches (864 to 965 mm) above the ramp surface.*

1122A.5.2.2 Handrail continuity. *Handrails on all ramps shall be continuous within the full length of each ramp run. Inside handrails on switchback or dogleg ramps shall be continuous between ramp runs.*

1122A.5.2.3 Handrail extensions. *Handrails shall extend a minimum of 12 inches (305 mm) horizontally above landings, beyond the top and bottom of the ramp runs. Extensions shall return to a wall, guard or the walking surface, or shall be continuous to the handrail of an adjacent ramp run. Handrail extensions shall be in the same direction as the ramp runs. (See Figure 11A-5A.)*

1122A.5.2.4 Handrail projections. *Handrails projecting from a wall shall have a space of $1\frac{1}{2}$ inches (38.1 mm) minimum between the wall and the handrail.*

Handrails may be located in a recess if the recess is a maximum of 3 inches (76.2 mm) deep and extends at least 18 inches (457 mm) above the top of the rail. Any wall or other surface adjacent to the handrail shall be free of sharp or abrasive elements. (See Figure 11A-6B.)

1122A.5.2.5 Handrail gripping surfaces. *Handrail gripping surfaces shall be continuous along their length, and shall not be obstructed along their tops or sides. The bottoms of handrail gripping surfaces shall not be obstructed for more than 20 percent of their length. When provided, horizontal projections shall occur $1\frac{1}{2}$ inches (38 mm) minimum below the bottom of the handrail gripping surface. The distance between horizontal projections and the bottom of the gripping surface shall be permitted to be reduced by $\frac{1}{8}$ inch (3.2 mm) for each $\frac{1}{2}$ inch (12.7 mm) of additional handrail perimeter dimension that exceeds 4 inches (102 mm).*

Handrail gripping surfaces and any surfaces adjacent to them shall be free of sharp or abrasive elements, and shall have rounded edges.

Exception: *Where handrails are provided along walking surfaces with slopes not steeper than 1 unit vertical in 20 units horizontal, the bottoms of handrail gripping surfaces shall be permitted to be obstructed along their entire length where they are integral to crash rails or bumper guards.*

1122A.5.2.6 Cross section. *Handrail gripping surfaces shall comply with this section, or the shape shall provide equivalent gripping surface.*

1. ***Circular cross section.*** *The handrail gripping surfaces with a circular cross section shall not be less than $1\frac{1}{4}$ inches (31.75 mm) nor more than 2 inches (50.8 mm) in cross-sectional dimension.*
2. ***Noncircular cross section.*** *Handrail gripping surfaces with a noncircular cross section shall have a perimeter dimension of 4 inches (102 mm) minimum and $6\frac{1}{4}$ inches (159 mm) maximum, and a cross-section dimension of $2\frac{1}{4}$ inches (57 mm) maximum.*

1122A.5.2.7 Fittings. *Handrails shall not rotate within their fittings.*

1122A.6 Edge protection. *Ramps and ramp landings shall be provided with a continuous and uninterrupted barrier on each side along the entire length in compliance with Sections 1012.10 and 1012.10.1. (See Figure 11A-5A.)*

Note: *Extended floors or ground surfaces, as permitted in Section 1012.10.2, are not allowed for ramps and ramp landings providing access to, or egress from, buildings or facilities where accessibility is required.*

SECTION 1123A—INTERIOR STAIRWAYS

1123A.1 General. *Interior stairways serving buildings containing covered multifamily dwelling units shall comply with this section.*

1123A.2 Open risers. *Open risers shall not be permitted on interior stairways.*

Exception: *Stairways within an individual dwelling unit.*

1123A.3 Treads. *All tread surfaces shall be stable, firm and slip resistant, and shall comply with Section 1119A.2. Treads shall have smooth, rounded or chamfered exposed edges and no abrupt edges at the nosing (lower front edge).*

1123A.4 Nosing. *Nosing shall not project more than $1^1/_4$ inches (31.8 mm) past the face of the riser below. Risers shall be sloped or the underside of the nosing shall have an angle not more than 30 degrees (0.52 rad) from the vertical. (See Figure 11A-6A.)*

1123A.5 Striping for the visually impaired. *Interior stairs shall have the upper approach and lower tread marked by a stripe providing clear visual contrast.*

The stripe shall be a minimum of 2 inches (50.8 mm) wide to a maximum of 4 inches (101.6 mm) wide placed parallel to, and not more than 1 inch (25.4 mm) from, the nose of the step or upper approach. The stripe shall extend the full width of the step or upper approach and shall be of material that is at least as slip resistant as the other treads of the stair. A painted stripe shall be acceptable. Grooves shall not be used to satisfy this requirement.

Exception: *Striping is not required for stairways within individual dwelling units.*

1123A.6 Interior stairway handrails.

1123A.6.1 Where required. *Stairways shall have handrails on each side. Intermediate handrails shall be located equidistant from the sides of the stairway and comply with Section 1014.9.*

Exception: *Stairways serving an individual dwelling unit may have one handrail, except that stairways open on one or both sides shall have handrails on the open side or sides.*

1123A.6.2 Handrail configuration.

1123A.6.2.1 Handrail heights. *The top of handrails shall be 34 to 38 inches (864 to 965 mm) above the nosing of the treads.*

1123A.6.2.2 Handrail continuity. *Handrails on all stairways shall be continuous within the full length of each stair flight. Inside handrails on switchback or dogleg stairs shall be continuous between stair flights.*

1123A.6.2.3 Handrail extensions. *At the top of stair flights, handrails shall extend a minimum of 12 inches (305 mm) horizontally above landings, beginning directly above the first riser nosing. Extensions shall return to a wall, guard or the walking surface, or shall be continuous to the handrail of an adjacent stair flight.*

At the bottom of stair flights, handrails shall extend at the slope of the stair flight for a distance equal to one tread depth beyond the last riser nosing. Such extension shall continue with 12 inches (305 mm) minimum horizontal extension, shall be continuous to the handrail of an adjacent stair flight, or shall return to a wall, guard or the walking surface. Handrail horizontal extensions shall be in the same direction as the stair flights. (See Figures 11A-6A and 11A-6E.)

Exception: *Stairways within an individual dwelling unit.*

1123A.6.2.4 Handrail projections. *Handrails projecting from a wall shall have a space of $1^1/_2$ inches (38.1 mm) minimum between the wall and the handrail.*

Handrails may be located in a recess if the recess is a maximum of 3 inches (76.2 mm) deep and extends at least 18 inches (457 mm) above the top of the rail. Any wall or other surface adjacent to the handrail shall be free of sharp or abrasive elements. (See Figure 11A-6B.)

1123A.6.2.5 Handrail gripping surfaces. *Handrail gripping surfaces shall be continuous along their length, and shall not be obstructed along their tops or sides. The bottoms of handrail gripping surfaces shall not be obstructed for more than 20 percent of their length. When provided, horizontal projections shall occur $1^1/_2$ inches (38 mm) minimum below the bottom of the handrail gripping surface. The distance between horizontal projections and the bottom of the gripping surface shall be permitted to be reduced by $^1/_8$ inch (3.2 mm) for each $^1/_2$ inch (12.7 mm) of additional handrail perimeter dimension that exceeds 4 inches (102 mm).*

Handrail gripping surfaces and any surfaces adjacent to them shall be free of sharp or abrasive elements, and shall have rounded edges.

1123A.6.2.6 Cross section. *Handrail gripping surfaces shall comply with this section, or the shape shall provide equivalent gripping surface.*

1. ***Circular cross section.*** *The handrail gripping surfaces with a circular cross section shall not be less than $1^1/_4$ inches (31.75 mm) nor more than 2 inches (50.8 mm) in cross-sectional dimension.*
2. ***Noncircular cross section.*** *Handrail gripping surfaces with a noncircular cross section shall have a perimeter dimension of 4 inches (102 mm) minimum and $6^1/_4$ inches (159 mm) maximum, and a cross-section dimension of $2^1/_4$ inches (57 mm) maximum.*

1123A.6.2.7 Fittings. *Handrails shall not rotate within their fittings.*

SECTION 1124A—ELEVATORS AND PLATFORM (WHEELCHAIR) LIFTS

1124A.1 General. *Elevators provided in covered multifamily buildings shall be accessible. Elevators required to be accessible shall comply with this chapter, ASME A17.1 (Safety Code for Elevators and Escalators), Title 8 of the California Code of Regulations, under "Elevator Safety Orders," and any other applicable safety regulations of other administrative authorities having jurisdiction.*

Exception: *Private elevators serving only one dwelling unit.*

1124A.2 Location. *Passenger elevators shall be located on a major accessible route and provisions shall be made to ensure that they remain accessible and usable at all times that the building is occupied.*

1124A.3 Size of cab and control locations.

1124A.3.1 General. *Elevators serving covered multifamily buildings shall be sized to accommodate a wheelchair in accordance with this section.*

Exception: *When the enforcing agency determines that compliance with any requirement of this section would create an unreasonable hardship, an exception to the requirement shall be granted when equivalent facilitation is provided, and where it can be demonstrated that a person using a wheelchair can enter and operate the elevator.*

1124A.3.2 Car inside. *The elevator car shall be designed to comply with one of the following:*

1. ***Door centered on the wall.*** *When the door is centered on the car wall, it shall provide a clear width of 42 inches (1067 mm) minimum, and the clear distance between car side walls shall be 80 inches (2032 mm) minimum. The clear distance between the back wall and the return panel shall be 51 inches (1295 mm) minimum. The clear distance between the back wall and the inside face of the door shall be 54 inches (1372 mm) minimum.*
2. ***Door not centered on the wall.*** *When the door is not centered on the car wall, it shall provide a clear width of 36 inches (914 mm) minimum, and the clear distance between car side walls shall be 68 inches (1727 mm) minimum. The clear distance between the back wall and the return panel shall be 51 inches (1295 mm) minimum. The clear distance between the back wall and the inside face of the door shall be 54 inches (1372 mm) minimum.*
3. ***Door at any location.*** *An elevator door with 36 inches (914 mm) minimum clear width may be installed at any location if one of the following is met:*
   - 3.1. *The car inside, with the door closed, shall provide a turning clear space at least 60 inches (1524 mm) in diameter to allow for the turning of a wheelchair.*
   - 3.2. *The clear distance between car side walls shall be 54 inches (1372 mm) minimum. The clear distance between the back wall and the return panel shall be 80 inches (2032 mm) minimum. The clear distance between the back wall and the inside face of the door shall be 80 inches (2032 mm) minimum.*

Note: *See Table 1124A.3.2 and Figure 11A-7A.*

TABLE 1124A.3.2—ELEVATOR CAR DIMENSIONS

	MINIMUM DIMENSIONS			
DOOR LOCATION	**DOOR CLEAR WIDTH**	**INSIDE CAR, SIDE TO SIDE**	**INSIDE CAR, BACK WALL TO FRONT RETURN**	**INSIDE CAR, BACK WALL TO INSIDE FACE OF DOOR**
Centered	42 inches (1067 mm)	80 inches (2032 mm)	51 inches (1295 mm)	54 inches (1372 mm)
Side (off-centered)	36 inches (914 mm)[1]	68 inches (1727 mm)	51 inches (1295 mm)	54 inches (1372 mm)
Any	36 inches (914 mm)[1]	54 inches (1372 mm)	80 inches (2032 mm)	80 inches (2032 mm)
Any	36 inches (914 mm)[2]	60 inches (1524 mm)[2]	60 inches (1524 mm)[2]	60 inches (1524 mm)[2]

1. *A tolerance of minus $^{5}/_{8}$ inch (15.9 mm) is permitted.*
2. *Other car configurations that provide a turning space complying with Section 1138A.1.3 with the door closed shall be permitted.*

1124A.3.3 Car controls.

1124A.3.3.1 Car control location. *Elevator floor buttons shall be located within one of the reach ranges specified in Section 1138A.3. Except for photoelectric tube bypass switches, emergency controls, including the emergency stop and alarm, shall be grouped in or adjacent to the bottom of the panel and shall be no lower than 35 inches (889 mm) from the floor. For multiple controls, only one set must comply with these height requirements. Floor buttons shall be provided with visual indicators to show when each call is registered. The visual indicators shall be extinguished when each call is answered.*

1124A.3.3.2 Car control buttons. *Passenger elevator car controls shall have a minimum dimension of $^{3}/_{4}$ inch (19.1 mm) and shall be raised $^{1}/_{8}$ inch (3.2 mm) plus or minus $^{1}/_{32}$ inch (0.8 mm) above the surrounding surface.*

Control buttons shall be illuminated, shall have square shoulders and shall be activated by a mechanical motion that is detectable.

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All control buttons shall be designated by a $^{5}/_{8}$-inch-minimum (15.9 mm) raised characters and standard raised symbols that comply with Sections 1143A.6 and 1143A.7 immediately to the left of the control button. Contracted Grade 2 Braille that conforms to Section 1143A.7 shall be located immediately below the numeral, character or symbol. A minimum clear space of $^{3}/_{8}$ inch (9.5 mm) or other suitable means of separation shall be provided between rows of control buttons. (See Figure 11A-7B.)

The raised characters and symbols shall be white on a black background. Controls and emergency equipment identified by raised symbols shall include, but not be limited to, "door open," "door close," "alarm bell," "emergency stop" and "telephone." The call button for the main entry floor shall be designated by a raised star at the left of the floor designation.

1124A.3.4 Emergency telephone. *When an emergency telephone system is installed, the emergency telephone handset shall be positioned no higher than 48 inches (1219 mm) above the floor, and the handset cord shall be a minimum of 29 inches (737 mm) in length. If the telephone system is located in a closed compartment, the compartment door hardware shall conform to the provisions of Section 1138A.4.4. Emergency intercommunication shall not require voice communication.*

1124A.4 Hall call buttons. *Call operation buttons and keypads shall be located within one of the reach ranges specified in Section 1138A.3, measured to the centerline of the highest operable part. Buttons shall have square shoulders, shall be a minimum of $^{3}/_{4}$ inch (19.1 mm) in size, and shall be raised $^{1}/_{8}$ inch (3.2 mm) plus or minus $^{1}/_{32}$ inch (0.8 mm) above the surrounding surface. The button designating the "Up" direction shall be on top. A clear floor or ground space complying with Section 1138A.1.4 shall be provided at call controls.*

Visual indication shall be provided to show each call registered and extinguished when answered. Objects adjacent to, and below, hall call buttons shall not project more than 4 inches (101.6 mm) from the wall. Hall call buttons shall be internally illuminated with a white light over the entire surface of the button.

1124A.5 Minimum illumination. *The minimum illumination at the car controls threshold and the landing when the car and landing doors are open shall not be less than 5 foot-candles (54 lx).*

1124A.6 Hall lantern. *A visual and audible signal shall be provided at each hoistway entrance indicating to the prospective passenger the car answering the call and its direction of travel as follows:*

1. *The visual signal for each direction shall be a minimum of $2^{1}/_{2}$ inches (63.5 mm) high by $2^{1}/_{2}$ inches (63.5 mm) wide, and visible from the proximity of the hall call button.*
2. *The audible signal shall sound once for the "up" direction and twice for the "down" direction or of a configuration which distinguishes between up and down elevator travel. Audible signals shall have a frequency of 1500 Hz maximum. Verbal annunciators shall have a frequency of 300 Hz minimum and 3000 Hz maximum. The audible signal and verbal annunciator shall be 10 dB minimum above ambient, but shall not exceed 80 dB, measured at the hall call button.*
3. *The center line of the fixture shall be located a minimum of 6 feet (1829 mm) in height above the finish floor.*
4. *The use of in-car lanterns, located in or on the car doorjambs, visible from the proximity of the hall call buttons and conforming to the above requirements of this section, shall be acceptable.*

Note: *The use of arrow shapes are preferred for visible signals.*

1124A.7 Door delay.

1124A.7.1 Hall call. *The minimum acceptable time from notification that a car is answering a call (lantern and audible signal) until the doors of the car start to close shall be calculated by the following equations, but shall be no less than 5 seconds:*

T = D / (1.5 ft/s) or T = D / (445 mm/s)

Where T is the total time in seconds and D is the distance from a point in the lobby or landing area 60 inches (1524 mm) directly in front of the farthest call button controlling that car to the centerline of its hoistway door (see Figure 11A-7D). For cars with in-car lanterns, T begins when the lantern is visible from the vicinity of hall call buttons and an audible signal is sounded.

1124A.7.2 Door delay for car calls. *The minimum acceptable time for the door to remain fully open after receiving a call shall not be less than 5 seconds.*

1124A.8 Doorjamb marking. *The floor level at all elevator hoistway entrances shall be designated by raised characters provided on both jambs. Characters shall be 2 inches (50.8 mm) in height located 48 inches (1219 mm) minimum above the finish floor, measured from the baseline of the lowest Braille cells, and 60 inches (1524 mm) maximum above the finish floor, measured from the baseline of the highest line of raised characters.*

On the main entry level, a raised five-pointed star shall be placed to the left of the raised character. The outside diameter of the star shall be 2 inches (50.8 mm) and all points shall be of equal length. The raised characters and the star shall be white on a black background. Contracted Grade 2 Braille, conforming to Section 1143A.7, shall be placed below the corresponding raised characters and the star. The Braille translation for the star shall state "MAIN". The raised characters shall comply with Section 1143A.6. (See Figure 11A-7C.)

1124A.9 Door protective and reopening devices. *Doors closed by automatic means shall be provided with a door-reopening device that will function to stop and reopen a car door and adjacent hoistway door in case the car door is obstructed while closing.*

This reopening device shall also be capable of sensing an object or person in the path of a closing door without requiring contact for activation at a nominal 5 inches and 29 inches (127 mm and 737 mm) above the floor.

Door-reopening devices shall remain effective for a period of not less than 20 seconds. After such an interval, the doors may close in accordance with the requirements of ASME A17.1.

1124A.10 Operation and leveling. *The elevator shall be automatic and be provided with a self-leveling feature that will automatically bring the car to the floor landings within a tolerance of plus or minus $^1/_2$ inch (12.7 mm) under rated loading to zero loading conditions. This self-leveling shall, within its zone, be entirely automatic and independent of the operating device and shall correct the overtravel or undertravel. The car shall also be maintained approximately level with the landing, irrespective of load.*

The clearance between the car platform sill and the edge of the hoistway landing shall be no greater than $1^1/_4$ inches (31.75 mm).

1124A.11 Platform (wheelchair) lifts.

1124A.11.1 General. *Platform (wheelchair) lifts may be provided between levels, in lieu of passenger elevators, when the vertical distance between landings, as well as the structural design and safeguards are as allowed by ASME A18.1 (Safety Standard for Platform Lifts and Stairway Chair Lifts), California Code of Regulations, Title 8 (Elevator Safety Orders), and any applicable safety regulations of other administrative authorities having jurisdiction.*

If lifts are provided, they shall be designed and constructed to facilitate unassisted entry, operation and exit from the lift, and shall comply with restrictions and enhancements of this section in conjunction with Title 8 of the California Code of Regulations.

1124A.11.2 Size and clear floor space. *Platform (wheelchair) lifts shall be of sufficient size to accommodate a wheelchair in accordance with Section 1138A.1.4.*

1124A.11.3 Lift access. *There shall be a level and clear floor area or landing at each floor or level served by platform (wheelchair) lifts. Clear floor areas or landings shall meet the applicable "accessible route" requirements.*

1124A.11.4 Standby power. *To ensure continued operation in case of primary power loss, platform (wheelchair) lifts shall be provided with standby power or with self-rechargeable battery power that provides sufficient power to operate all platform lift functions for a minimum of five upward and downward trips.*

1124A.11.5 Openness. *Platform (wheelchair) lifts on an accessible means of egress shall not be installed in a fully enclosed hoistway.*

1124A.11.6 Doors and gates. *Lifts shall have low energy power-operated doors or gates, which shall remain open for 20 seconds minimum. End doors shall have 32 inches (813 mm) minimum clear opening width. Side doors clear opening width shall be 42 inches (1067 mm) minimum.*

Exception: *Lifts having doors or gates on opposite sides shall be permitted to have self-closing manual doors or gates.*

1124A.11.7 Restriction sign. *A sign complying with Section 1143A shall be securely fastened in a conspicuous place at each landing and on the platform. The sign shall state "No Freight" in letters not less than 5/8 inch (16 mm) high and include the "International Symbol of Accessibility."*

SECTION 1125A—HAZARDS ON ACCESSIBLE ROUTES

1125A.1 Warning curbs. *Abrupt changes in level exceeding 4 inches (101.6 mm) in vertical dimension, such as changes in level at planters or fountains located in or adjacent to walks, halls, corridors, passageways, aisles, pedestrian ways and other circulation spaces shall be identified by curbs projecting at least 6 inches (152.4 mm) in height above the walk or sidewalk surface to warn the blind of a potential drop-off.*

Exception: *When a guardrail or handrail is provided with edge protection in accordance with Section 1012.10.1.*

1125A.2 Headroom clearance. *Walks, halls, corridors, passageways, aisles, pedestrian ways and other circulation spaces which are part of the required egress system shall have a minimum clear headroom as required in Section 1003.2. Other walks, pedestrian ways and circulation spaces shall have a minimum clear headroom of 80 inches (2032 mm). If the vertical clearance of an area adjoining an accessible route is reduced to less than 80 inches (2032 mm), a guardrail or other barrier having its leading edge at or below 27 inches (686 mm) above the finished floor shall be provided.*

Exception: *Doorways and archways less than 24 inches (610 mm) in depth may have a minimum clear headroom of 80 inches (2032 mm). (See Section 1126A for door requirements.)*

1125A.3 Overhanging obstructions. *Any obstruction that overhangs a pedestrian way shall be a minimum of 80 inches (2032 mm) above the walking surface as measured from the bottom of the obstruction. (See Figure 11A-1B.) Where a guy support is used parallel to a path of travel, including, but not limited to, sidewalks, a guy brace, sidewalk guy or similar device shall be used to prevent an overhanging obstruction (see Section 1125A.2 for required headroom clearance).*

Exception: *Door closers and door stops shall be permitted to be 78 inches (1981 mm) minimum above the finish floor or ground.*

1125A.4 Free-standing signs. *Wherever signs mounted on posts or pylons protrude from the posts or pylons and the bottom edge of the sign is less than 80 inches (2032 mm) above the finished floor or ground level, the edges of such signs shall be rounded or eased and the corners shall have a minimum radius of 0.125 inches. (See Section 1125A.2 for required headroom clearance).*

SECTION 1126A—DOORS, GATES AND WINDOWS

1126A.1 Width and height of doors and gates. *Doorways which provide access to common use areas or covered multifamily dwellings shall comply with the following:*

1. *Permit the installation of a door or gate not less than 36 inches (914 mm) in width, not less than 80 inches (2032 mm) in height, and provide a clear opening of not less than 32 inches (813 mm), measured with the door positioned at an angle of 90 degrees from its closed position.*
2. *Doors or gates shall be capable of opening at least 90 degrees.*

3. *A pair of doors or gates, manual or automatic, shall have at least one leaf which provides a clear width of not less than 32 inches (813 mm), measured with the door or gate positioned at an angle of 90 degrees from its closed position.*
4. *The width of any component in the egress system shall not be less than the minimum width required by Section 1005.*
5. *Revolving doors or gates shall not be used as required entrances for persons with disabilities, and shall not be part of an accessible route.*

1126A.2 Level floor or landing. *The floor or landing on each side of an exit door or gate shall be level. (See Chapter 10.)*

1126A.2.1 Thresholds and changes in elevation. *The floor or landing shall not be more than $^1/_2$ inch (12.7 mm) lower than the top of the threshold of the doorway. (See Figure 11A-8I.)*

Changes in level between $^1/_4$ inch (6.35 mm) and $^1/_2$ inch (12.7 mm) shall be beveled with a slope no greater than 1 unit vertical in 2 units horizontal (50-percent slope). Changes in level greater than $^1/_2$ inch (12.7 mm) shall be accomplished by means of a ramp. (See Section 1122A.)

1126A.3 Maneuvering clearances.

1126A.3.1 General. *The minimum maneuvering clearance at doors or gates shall comply with Sections 1126A.3.2, 1126A.3.3 and 1126A.3.4. The floor or landing area within the required maneuvering clearance shall be level and clear. The required length shall be measured at right angles to the plane of the door or gate in its closed position. Maneuvering clearances shall extend the full width of the doorway and the required latch side or hinge side clearances (strike edge maneuvering clearances).*

1126A.3.2 Swinging doors and gates.

1126A.3.2.1 Front approach. *The following provisions shall apply to swinging doors or gates with front approach:*

1. ***Pull side approach.*** *The level floor or landing shall extend in the direction of the door or gate swing at least 60 inches (1524 mm). (See Figure 11A-8A(a).)*
2. ***Push side approach.*** *The level floor or landing shall extend in the direction of the door or gate swing at least 48 inches (1219 mm). (See Figure 11A-8A(a).)*
3. ***Doors and gates with push side approach having both a closer and a latch.*** *Doors or gates with push side approach having both a closer and a latch shall be provided with a clear and level area extending a minimum of 12 inches (305 mm) past the strike edge on the approach side of the door or gate. (See Figure 11A-8A(a).)*
4. ***Strike edge maneuvering space.*** *The width of the level area on the side to which the door or gate swings shall extend at least 24 inches (610 mm) past the strike edge for exterior doors or gates and at least 18 inches (457 mm) past the strike edge for interior doors or gates. (See Figure 11A-8A(a).)*

Note: *See Section 1132A.5 for maneuvering clearances at primary entry doors and all required exit doors to covered multifamily dwellings.*

1126A.3.2.2 Hinge side approach. *The following provisions shall apply to swinging doors or gates with hinge side approach:*

1. ***Pull side approach.*** *Doors or gates with pull side approach shall be provided with a level floor or landing not less than 60 inches (1524 mm) in depth. A clear and level area shall extend a minimum of 36 inches (914 mm) past the strike edge on the approach side of the door or gate. (See Figure 11A-8A(b).)*
2. ***Push side approach.*** *Doors or gates with push side approach shall have a level floor or landing not less than 44 inches (1118 mm) in depth, and shall be provided with a clear and level area extending a minimum of 54 inches (1372 mm) from the strike edge of the door or gate jamb past the hinge side of the door or gate. Doors or gates with a latch and closer shall have a level floor or landing not less than 48 inches (1219 mm) depth at the push side of the door or gate. (See Figure 11A-8A(b).)*

1126A.3.2.3 Latch side approach. *The following provisions shall apply to swinging doors or gates with latch side approach:*

1. ***Pull side approach.*** *Doors or gates with pull side approach shall have a level floor or landing not less than 60 inches (1524 mm) in depth, and shall be provided with a clear and level area extending a minimum of 24 inches (610 mm) past the strike edge on the approach side of the door or gate. (See Figure 11A-8A(c).)*
2. ***Push side approach.*** *Doors or gates with push side approach shall have a level floor or landing not less than 44 inches (1118 mm) in depth, and shall be provided with a clear and level area extending a minimum of 24 inches (610 mm) past the strike edge on the approach side of the door or gate. Doors or gates with a closer shall have a level floor or landing not less than 48 inches (1219 mm) depth at the push side of the door or gate. (See Figure 11A-8A(c).)*

1126A.3.3 Space between consecutive doors or gates. *The minimum space between two hinged or pivoted doors or gates in series, serving other than a required exit stairway, shall provide a minimum of 48 inches (1219 mm) plus the width of the door or gate swinging into the space. Doors or gates in a series shall swing either in the same direction or away from the space between the doors or gates. (See Figures 11A-8G and 11A-8H.)*

Where the door or gate opens into a stair or smokeproof enclosure, the landing need not have a minimum length of 60 inches (1524 mm). (See Figure 11A-8H.)

1126A.3.4 Doorways without doors or gates, sliding doors and folding doors. *Doorways less than 36 inches (914 mm) wide without doors or gates, sliding doors or folding doors shall have maneuvering clearances complying with this section.*

1126A.3.4.1 Front approach. *The level floor or landing shall extend at least 48 inches (1219 mm) on each side, perpendicular to the doorway. Strike edge maneuvering clearance for front approach is not required. (See Figure 11A-8B(a).)*

***1126A.3.4.2 Side approach**. Doorways without doors or gates, and side approach, shall be provided with level floor or landing extending 42 inches (1067 mm) minimum on each side, perpendicular to the doorway. Strike edge maneuvering clearance is not required. (See Figure 11A-8B(d).)*

***1126A.3.4.3 Pocket/ hinge side approach.** Doors with pocket or hinge approach shall be provided with a level floor or landing not less than 42 inches (1067 mm) in depth. The level floor or landing shall extend a minimum of 22 inches (559 mm) beyond the pocket/hinge side. (See Figure 11A-8B(b).)*

***1126A.3.4.4 Stop/latch side approach.** Doors with stop or latch approach shall have a level floor or landing not less than 42 inches (1067 mm) in depth. The level floor or landing shall extend a minimum of 24 inches (610 mm) beyond the stop/latch side. (See Figure 11A-8B(c).)*

***1126A.3.4.5 Recessed doors or gates.** Maneuvering clearances for forward approach shall be provided when any obstruction within 18 inches (457 mm) of the latch side of an interior doorway, or within 24 inches (610 mm) of the latch side of an exterior doorway, projects more than 8 inches (203 mm) beyond the face of the door or gate, measured perpendicular to the face of the door or gate. (See Figure 11A-8C.)*

***1126A.4 Closer-effort to operate doors or gates.** Maximum effort to operate doors or gates shall not exceed $8^{1}/_{2}$ pounds (38 N) for exterior doors or gates and 5 pounds (22 N) for interior doors or gates, such pull or push effort being applied at right angles to hinged doors or gates and at the center plane of sliding or folding doors. Compensating devices or automatic door or gate operators may be utilized to meet these standards. When fire doors are required, the maximum effort to operate the door may be increased to the minimum allowable by the appropriate enforcement agency, not to exceed 15 pounds (66.7 N).*

***1126A.4.1 Door or gate closer.** If a door or gate has a closer, the sweep period of the closer shall be adjusted so that from an open position of 90 degrees, the door or gate will take 5 seconds minimum to move to a position of 12 degrees from the latch.*

***1126A.4.2 Spring hinges.** Spring hinges shall be adjusted so that from the open position of 70 degrees, the door or gate shall move to the closed position in 1.5 seconds minimum.*

***1126A.5 Type of latch and lock.** The type of latch and lock required for all doors or gates shall be in accordance with Section 1126A.6 and Chapter 10.*

***1126A.6 Hand-activated door or gate hardware.** Hand-activated door or gate latching, locking and opening hardware shall be centered between 30 inches (762 mm) and 44 inches (1118 mm) above the floor. Latching and locking doors or gates that are hand-activated and on an accessible route shall be operable with a single effort by lever type hardware, panic bars, push-pull activating bars or other hardware designed to provide passage without requiring the ability to grasp the opening hardware. Locked exit doors or gates shall operate consistent with Section 1126A.4, in the direction of egress. When sliding doors are in the fully open position, operating hardware shall be exposed and usable from both sides.*

***Exception:** Access gates in barrier walls and fences protecting pools, spas and hot tubs shall be permitted to have operable parts of the release of latch on self-latching devices at 54 inches (1372 mm) maximum above the finish floor or ground provided the self-latching devices are not also self-locking devices operated by means of a key, electronic opener or integral combination lock.*

***1126A.6.1 Lever type hardware.** The lever or lever of actuated latches or locks shall be curved with a return to within $^{1}/_{2}$ inch (12.7 mm) of the door or gate to prevent catching on the clothing of persons during egress.*

***Exception:** Group R and U occupancies with an occupant load of 10 or less.*

***1126A.7 Smooth surface.** Swinging door or gate surfaces within 10 inches (254 mm) of the finish floor or ground measured vertically shall have a smooth surface on the push side extending the full width of the door or gate. Parts creating horizontal or vertical joints in these surfaces shall be within $^{1}/_{16}$ inch (1.6 mm) of the same plane as the other and be free of sharp or abrasive edges. Cavities created by added kick plates shall be capped.*

Exceptions:

1. *Automatic doors or gates.*
2. *Tempered glass doors without stiles and having a bottom rail or shoe with the top leading edge tapered at 60 degrees minimum from the horizontal.*
3. *Doors or gates that do not extend to within 10 inches (254 mm) of the finish floor or ground.*

***1126A.8 Windows.** Where glazed openings are provided in accessible rooms or spaces for operation by occupants, at least one opening shall comply with Section 1138A.4.*

Each glazed opening required by the enforcing agency to be operable shall comply with Section 1138A.4.

SECTION 1127A —COMMON USE FACILITIES

***Note:** For public use facilities, see Chapter 11B of this code.*

***1127A.1 General.** When provided, common use areas and facilities in covered multifamily housing developments shall be accessible to persons with disabilities. Common use facilities include, but are not limited to, lobbies, toilet and bathing facilities, laundry facilities, community rooms, clubhouses, health and fitness facilities, game rooms and portions of common use tenant storage. All entrances,*

doors, fixtures and controls shall be on an accessible route. Facilities and fixtures required to be accessible shall comply with the following provisions:

1. ***Doors.*** *Doors to accessible bathrooms shall comply with Section 1126A. Doors shall not swing into the floor space required for any fixture.*
2. ***Clear floor space.*** *All fixtures and controls shall be on an accessible route. Clear floor spaces at fixtures and controls, the accessible route and the turning space may overlap. This clear space shall comply with Sections 1138A.1.4 and 1138A.3.*
3. ***Water closets.*** *Where a toilet stall is provided, it shall comply with Section 1127A.2.1 or 1127A.2.2, and its water closet shall comply with Section 1127A.2.3.*
4. ***Lavatory and mirrors.*** *Where a lavatory and/or mirror is provided, it shall comply with Sections 1127A.3 and/or 1127A.8.3.*
5. ***Controls and dispensers.*** *Where controls, dispensers, receptacles or other types of equipment are provided, at least one of each shall be on an accessible route and shall comply with Sections 1127A.8 and 1138A.3.*
6. ***Bathing and shower facilities.*** *Where bathtubs or showers are provided, at least one fixture of each type provided shall be accessible per room. For bathtubs, see Section 1127A.5.2. For shower compartments, see Section 1127A.5.3.*
7. ***Toilet facilities.*** *Toilet facilities shall comply with Section 1127A.2.*
8. ***Laundry facilities.*** *Laundry facilities shall comply with Section 1127A.10.*
9. ***Storage facilities.*** *Storage facilities shall comply with Section 1127A.11.*
10. ***Fixed or built-in seating, tables and counters.*** *Fixed or built-in seating, tables and counters shall comply with Section 1127A.12.*

1127A.2 Toilet facilities. *When common use toilet facilities are provided for residents or guests, at least one percent of the total number of fixtures but not less than one of each type shall comply with this section.*

1127A.2.1 Multiple-accommodation toilet facilities. *Multiple-accommodation toilet facilities shall have the following:*

Note: *(See Figures 11A-9A and 11A-9B.)*

1. ***Wheelchair turning space.*** *Turning space of sufficient size to inscribe a circle with a diameter not less than 60 inches (1524 mm) or a T-shaped space shall be provided within the toilet facility. The wheelchair turning space shall comply with Section 1138A.1.3. Other than the door to the accessible water closet compartment, a door, in any position, may encroach into this space by not more than 12 inches (305 mm).*
2. ***Clear space at fixtures.*** *Doors shall not swing into the clear floor space required for any fixture. Required clear floor space, clearance at fixtures, and turning space shall be permitted to overlap.*
3. ***Accessible water closet compartment.*** *Accessible water closet compartments shall be 60 inches (1524 mm) wide minimum measured perpendicular to the side wall, 56 inches (1422 mm) deep minimum for wall hung water closets and 59 inches (1499 mm) deep minimum for floor mounted water closets measured perpendicular to the rear wall. (See Figure 11A-9A(c).)*

   Water closet fixtures located in accessible water closet compartments shall be positioned with a wall or partition to the rear and to one side. The centerline of the water closet shall be 17 inches (432 mm) minimum to 18 inches (457 mm) maximum from the side wall or partition.

   In ambulatory accessible toilet compartments specified in Item 6 of this section, the water closet shall be 17 inches (432 mm) minimum and 19 inches (483 mm) maximum from the side wall or partition. (See Figure 11A-9A (d).)

   Clearance around a water closet shall be 60 inches (1524 mm) minimum measured perpendicular from the side wall and 56 inches (1422 mm) minimum measured perpendicular from the rear wall. The required clearance around the water closet shall be permitted to overlap the water closet, associated grab bars, dispensers, sanitary napkin disposal units, coat hooks, shelves, accessible routes, clear floor space and clearances required at other fixtures, and the turning space. No other fixtures or obstructions shall be located within the required water closet clearance.

   A minimum 48 inches (1219 mm) deep and 60 inches (1524 mm) wide clear maneuvering space shall be provided in front of the water closet if the compartment has an end-opening door (facing the water closet). A minimum 60 inches (1524 mm) deep and 60 inches (1524 mm) wide clear maneuvering space shall be provided in a compartment with the door located at the side. (See Figure 11A-9A.)
4. ***Grab bars.*** *Grab bars shall be provided on the side wall closest to the water closet and on the rear wall. Grab bars shall comply with this section and Section 1127A.4.*

   The side wall grab bar shall be 42 inches (1067 mm) long minimum, located 12 inches (305 mm) maximum from the rear wall and extend 54 inches (1372 mm) minimum from the rear wall. The front end of the side grab bar shall be positioned 24 inches (610 mm) minimum in front of the water closet.

   The rear wall grab bar shall be 36 inches (914 mm) long minimum and extend from the centerline of the water closet 12 inches (305 mm) minimum on one side and 24 inches (610 mm) minimum on the other side.

   Exceptions:

   1. *The rear grab bar shall be permitted to be 24 inches (610 mm) long minimum, centered on the water closet, when wall space does not permit a length of 36 inches (914 mm) minimum due to the location of a recessed fixture adjacent to the water closet.*

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2. *When the enforcing agency requires flush controls for flush valves to be located in a position that conflicts with the location of the rear grab bar, then the rear grab bar shall be permitted to be split or shifted to the open side of the toilet area.*

5. ***Compartment doors.*** *Compartment doors shall comply with Section 1126A and the following:*

   5.1. *The water closet compartment shall be equipped with a door that has an automatic-closing device, and shall have a clear, unobstructed opening width of 32 inches (813 mm) when located at the end and 34 inches (864 mm) when located at the side with the door positioned at an angle of 90 degrees from its closed position.*

   5.2. *When standard compartment doors are used, with a minimum 9-inch (228.6 mm) clearance for footrests underneath and a self-closing device, clearance at the strike edge as specified in Section 1126A.3.2 is not required.*

   5.3. *The inside and outside of the compartment door shall be equipped with a loop or U-shaped handle immediately below the latch. The latch shall be flip-over style, sliding or other hardware not requiring the user to grasp or twist.*

   5.4. *Except for door-opening widths and door swings, a clear, unobstructed access of not less than 44 inches (1118 mm) shall be provided to water closet compartments designed for use by persons with disabilities, and the space immediately in front of a water closet compartment shall not be less than 48 inches (1219 mm) as measured at right angles to compartment door in its closed position.*

   5.5. *Doors shall be located in the front or in the side wall or partition farthest from the water closet. Where located in the front partition, the door opening shall be 4 inches (102 mm) maximum from the side wall or partition. Where located in the side wall or partition, the door opening shall be 4 inches (102 mm) maximum from the front wall or partition.*

6. ***Ambulatory accessible compartments.*** *When six or more toilet compartments are provided within a multiple-accommodation toilet room, or when the combination of urinals and water closets totals six or more fixtures, at least one compartment shall comply with Section 1127A.2.1, Items 2 and 3. At least one additional ambulatory compartment shall have a depth of 60 inches (1524 mm) minimum, and a width of 35 inches (890 mm) minimum and 37 inches (940 mm) maximum.*

   The ambulatory accessible compartment shall have a self-closing door, which shall not swing into the minimum required compartment area. Grab bars, complying with Sections 1127A.4.2, 1127A.4.3, 1127A.4.4 and 1127A.4.5, shall be installed on each compartment side wall. (See Figure 11A-9A (d).)

1127A.2.2 Single-accommodation toilet facilities. *Single-accommodation toilet facilities shall comply with the following:*

Note: *See Figures 11A-9A and 11A-9B.*

1. ***Wheelchair clearance.*** *There shall be sufficient space in the toilet room for a wheelchair measuring 30 inches (762 mm) wide by 48 inches (1219 mm) long to enter the room and permit the door to close. There shall be in the room a clear turning space of at least 60 inches (1524 mm) in diameter or a T-shaped space complying with Section 1138A.1.3.*

   Required clear floor space, clearance at fixtures and turning space shall be permitted to overlap.

2. ***Encroachment of doors.*** *Doors shall not encroach into the turning space specified in Item 1 of this section by more than 12 inches (305 mm).*

3. ***Accessible water closet.*** *A water closet fixture located in a single-accommodation toilet facility shall be positioned with a wall or partition to the rear and to one side. The centerline of the water closet shall be 17 inches (432 mm) minimum to 18 inches (457 mm) maximum from the side wall or partition.*

   Clearance around a water closet shall be 60 inches (1524 mm) minimum measured perpendicular from the side wall and 56 inches (1422 mm) minimum measured perpendicular from the rear wall. The required clearance around the water closet shall be permitted to overlap the water closet, associated grab bars, dispensers, sanitary napkin disposal units, coat hooks, shelves, accessible routes, clear floor space and clearances required at other fixtures, and the turning space. No other fixtures or obstructions shall be located within the required water closet clearance.

   A minimum 48 inches (1219 mm) deep and 60 inches (1524 mm) wide clear maneuvering space shall be provided in front of the water closet.

4. ***Grab bars.*** *Grab bars shall be provided on the side wall closest to the water closet and on the rear wall. Grab bars shall comply with this section and Section 1127A.4.*

   The side wall grab bar shall be 42 inches (1067 mm) long minimum, located 12 inches (305 mm) maximum from the rear wall and extend 54 inches (1372 mm) minimum from the rear wall. The front end of the side grab bar shall be positioned 24 inches (610 mm) minimum in front of the water closet.

   The rear wall grab bar shall be 36 inches (914 mm) long minimum and extend from the centerline of the water closet 12 inches (305 mm) minimum on one side and 24 inches (610 mm) minimum on the other side.

   Exceptions:

   1. *The rear grab bar shall be permitted to be 24 inches (610 mm) long minimum, centered on the water closet, when wall space does not permit a length of 36 inches (914 mm) minimum due to the location of a recessed fixture adjacent to the water closet.*
   2. *When the enforcing agency requires flush controls for flush valves to be located in a position that conflicts with the location of the rear grab bar, then the rear grab bar shall be permitted to be split or shifted to the open side of the toilet area.*

5. ***Accessible route.*** *All doors, fixtures and controls shall be on an accessible route. The minimum clear width of an accessible route shall be 36 inches (914 mm) except at doors (See Section 1126A). If a person in a wheelchair must make a turn around an obstruction, the minimum clear width of the accessible route shall be as specified in Section 1138A.1.5.*

1127A.2.3 Water closets. *Water closets required to be accessible shall comply with the following:*

Note: *See Figure 11A-9B.*

1. ***Height.*** *The height of accessible water closets shall be a minimum of 17 inches (432 mm) to a maximum of 19 inches (483 mm) measured to the top of a maximum 2-inch-high (50.8 mm) toilet seat.*
2. ***Controls.*** *Flush controls shall be hand operated or automatic. Hand operated controls shall be operable with one hand and shall not require tight grasping, pinching or twisting. Controls for the flush valves shall be mounted on the open side of the water closet no more than 44 inches (1118 mm) above the floor. The force required to activate controls shall be no greater than 5 pounds (22.2 N).*
3. ***Toilet seats.*** *Seats shall not be sprung to return to a lifted position.*

1127A.2.4 Accessible urinals. *When urinals are provided, at least one shall comply with the following:*

1. ***Height and wall projection****. Urinals shall be floor mounted (stall type) or wall hung. The rim of the wall hung urinals shall be 17 inches (432 mm) maximum above the finish floor. Urinals (floor mounted and wall hung) shall be* $13^{1}/_{2}$ *inches (343 mm) deep minimum measured from the outer face of the rim to the back of the fixture.*
2. ***Flush controls.*** *Flush controls shall be hand operated or automatic. Hand operated controls shall be operable with one hand, shall not require tight grasping, pinching or twisting of the wrist and shall be mounted no more than 44 inches (1118 mm) above the floor. The force required to activate controls shall be no greater than 5 pounds (22.2 N). Electronic automatic flushing controls are preferable.*
3. ***Clear floor space.*** *A clear floor space 30 inches by 48 inches (762 mm by 1219 mm) shall be provided in front of the urinal to allow forward approach. The clear floor space shall comply with Section 1138A.1.4.*

1127A.3 Accessible lavatories. *When common use lavatories are provided for residents or guests, at least one, and not less than 1 percent of all lavatories, shall comply with the following:*

1. ***Location.*** *Lavatories shall be installed with the centerline of the fixture a minimum of 18 inches (457 mm) horizontally from an adjoining wall, partition or fixture. The top of the fixture rim shall be a maximum of 34 inches (864 mm) above the finished floor.*
2. ***Floor space.*** *A clear floor space at least 30 inches by 48 inches (762 mm by 1219 mm) shall be provided in front of accessible lavatories to allow forward approach. Such clear floor space shall adjoin or overlap an accessible route or another clear floor space.*
3. ***Knee and toe space.*** *A clear and obstructed knee and toe space, complying with Section 1138A.2, shall be provided underneath the lavatory. The knee and toe space shall be centered on the fixture. The clear floor space required by Item 2 shall not extend into the knee and toe space more than 19 inches (483 mm). (See Figure 11A-9D.)*
4. ***Finished floor.*** *The finished floor beneath the lavatory shall be extended to the wall.*
5. ***Plumbing protection.*** *Water supply and drain pipes under lavatories shall be insulated or otherwise covered to protect against contact. There shall be no sharp or abrasive surfaces under lavatories.*
6. ***Lavatory faucet controls.*** *Faucet controls and operation mechanisms shall be operable with one hand and shall not require tight grasping, pinching or twisting of the wrist. The force required to activate controls shall be no greater than 5 pounds (22.2N). Lever operated, push type and electronically controlled mechanisms are examples of acceptable designs. Hand operated metering faucets are allowed if the faucet remains open for at least 10 seconds.*

1127A.4 Grab bars, tub and shower seats, fasteners and mounting devices.

1127A.4.1 General. *Grab bars, tub and shower seats, fasteners and mounting devices required by this chapter shall comply with this section.*

1127A.4.2 Location. *Grab bars shall be installed in a horizontal position, 33 inches (838 mm) minimum and 36 inches (914 mm) maximum above the finish floor measured to the top of the gripping surface.*

Exception: *The height of the lower grab bar on the back wall of a bathtub shall comply with Section 1127A.5.2.*

1127A.4.3 Diameter or width. *The diameter or width of the gripping surfaces of a grab bar shall comply with the following:*

Note: *See Figure 11A-9C.*

1. ***Circular cross section.*** *Grab bars with circular cross section shall have an outside diameter of* $1^{1}/_{4}$ *inches (32 mm) minimum and 2 inches (51 mm) maximum.*
2. ***Noncircular cross section.*** *Grab bars with noncircular cross section shall have a cross-section dimension of 2 inches (51 mm) maximum. The perimeter dimension of grab bars with non-circular cross section shall be 4 inches (102 mm) minimum and 4.8 inches (122 mm) maximum.*
3. ***Alternate configuration.*** *L-shaped or U-shaped grab bars shall be permitted.*

1127A.4.4 Structural strength. *The structural strength of grab bars, tub and shower seats, fasteners and mounting devices shall meet the following specifications:*

1. *Bending stress in a grab bar or seat induced by the maximum bending moment from the application of a 250-pound (1112 N) point load shall be less than the allowable stress for the material of the grab bar or seat.*

2. *Shear stress induced in a grab bar or seat by the application of a 250-pound (1112 N) point load shall be less than the allowable shear stress for the material of the grab bar or seat, and if its mounting bracket or other support is considered to be fully restrained, then direct and torsional shear stresses shall not exceed the allowable shear stress.*
3. *Shear force induced in a fastener or mounting device from the application of a 250-pound (1112 N) point load shall be less than the allowable lateral load of either the fastener or mounting device or the supporting structure, whichever is the smaller allowable load.*
4. *Tensile force induced in a fastener by a direct tension force of a 250-pound (1112 N) point load, plus the maximum moment from the application of a 250-pound (1112 N) point load, shall be less than the allowable withdrawal load between the fastener and supporting structure.*
5. *Grab bars shall not rotate within their fittings.*

1127A.4.5 Surface. *A grab bar and any wall or other surface adjacent to it shall be free of any sharp or abrasive elements and shall have rounded edges.*

1127A.4.6 Spacing. *When grab bars are mounted adjacent to a wall, the space between the wall and the grab bars shall be $1^1/_2$ inches (38 mm). (See Figure 11A-9C.) The space between the grab bar and projecting objects below and at the ends shall be $1^1/_2$ inches (38 mm) minimum. The space between the grab bar and projecting objects above shall be 12 inches (305 mm) minimum.*

Exceptions:

1. *The space between the grab bars and shower controls, shower fittings and other grab bars above shall be permitted to be $1^1/_2$ inches (38 mm) minimum.*
2. *For L-shaped or U-shaped grab bars the space between the walls and the grab bar shall be $1^1/_2$ inches (38 mm) minimum for a distance of 6 inches (152 mm) on either side of the inside corner between two adjacent wall surfaces.*

1127A.5 Bathing facilities.

1127A.5.1 General. *When common use bathing facilities are provided for residents or guests, including showers, bathtubs or lockers, at least one of each type of fixture in each facility, and not less than 1 percent of all fixtures, shall comply with this section.*

1127A.5.2 Bathtubs. *Bathtubs required to be accessible shall comply with the following:*

1127A.5.2.1 Floor space. *Clearance in front of bathtubs shall extend the length of the bathtub and shall be 48 inches (1219 mm) wide minimum for forward approach and 30 inches (762 mm) wide minimum for parallel approach. A lavatory complying with Section 1127A.3 shall be permitted at the control end of the clearance. When a permanent seat is provided at the head end of the bathtub, the clearance shall extend 12 inches (305 mm) minimum beyond the wall at the head end of the bathtub. (See Figure 11A-9E.)*

1127A.5.2.2 Seat. *A removable in-tub seat or a permanent seat at the head end of the tub shall be provided. The structural strength of seats and their attachments shall comply with Section 1127A.4.4. Seats shall be mounted securely and shall not slip during use.*

The top of bathtub seats shall be 17 inches (432 mm) minimum and 19 inches (483 mm) maximum above the bathroom finish floor. The depth of a removable in-tub seat shall be 15 inches (381 mm) minimum and 16 inches (406 mm) maximum. Permanent seats at the head end of the bathtub shall be 15 inches (381 mm) deep minimum and shall extend from the back wall to or beyond the outer edge of the bathtub. (See Figure 11A-9E.)

1127A.5.2.3 Grab bars. *Grab bars complying with Section 1127A.4 shall be provided in accordance with this section. (See Figure 11A-9F.) When separate grab bars are required on adjacent walls at a common mounting height, an L-shaped or U-shaped grab bar meeting the dimensional requirements of this section shall be permitted.*

1. ***Bathtubs with permanent seats.*** *Two horizontal grab bars shall be installed on the back wall. One shall be located 33 inches (838 mm) minimum and 36 inches (914 mm) maximum above the finish floor measured to the top of the gripping surface, and the other shall be located 8 inches (203 mm) minimum and 10 inches (254 mm) maximum above the rim of the bathtub. Each grab bar shall be 48 inches (1219 mm) long minimum, and shall be installed 15 inches (381 mm) maximum from the head end wall and 12 inches (305 mm) maximum from the control end wall.*

   A grab bar 24 inches (610 mm) long minimum shall be installed on the control end wall at the front edge of the bathtub.
2. ***Bathtubs with removable seats.*** *Two horizontal grab bars shall be installed on the back wall. One shall be located 33 inches (838 mm) minimum and 36 inches (914 mm) maximum above the finish floor measured to the top of the gripping surface, and the other shall be located 8 inches (203 mm) minimum and 10 inches (254 mm) maximum above the rim of the bathtub. Each grab bar shall be 24 inches (610 mm) long minimum and shall be installed 24 inches (610 mm) maximum from the head end wall and 12 inches (305 mm) maximum from the control end wall.*

   A grab bar 24 inches (610 mm) long minimum shall be installed on the control end wall at the front edge of the bathtub. A grab bar 12 inches (305 mm) long minimum shall be installed on the head end wall at the front edge of the bathtub.

1127A.5.2.4 Controls. *Faucets and controls (other than drain stoppers) shall be located on an end wall between the bathtub rim and grab bar, and between the open side of the bathtub and the centerline of the width of the bathtub. (See Figure 11A-9F.)*

Controls shall be operable with one hand and shall not require tight grasping, pinching or twisting of the wrist. The force required to activate controls shall be no greater than 5 pounds (22.2 N).

1127A.5.2.5 Shower spray unit. *A shower spray unit with a hose at least 59 inches (1524 mm) long that can be used both as a fixed shower head and as a hand-held shower shall be provided.*

The shower spray unit shall have an on/off control with a non-positive shut-off. If an adjustable-height shower head on a vertical bar is used, the bar shall be installed so as not to obstruct the use of the grab bars.

1127A.5.2.6 Bathtub enclosures. *When provided, enclosures for bathtubs shall not obstruct controls, faucets, shower and spray units, or obstruct transfer from wheelchairs onto bathtub seats or into bathtubs. Enclosures on bathtubs shall not have tracks installed on the rim of the open face of the bathtub.*

1127A.5.3 Shower compartments. *Shower compartments required to be accessible shall comply with this section. (See Figures 11A-9H, 11A-9I, 11A-9J and 11A-9K.)*

1127A.5.3.1 Size and clearance.

1. ***Standard roll-in shower compartments.*** *Standard roll-in shower compartments shall meet one of the following:*
   1.1. *30 inches (762 mm) minimum in depth and 60 inches (1524 mm) minimum in width between wall surfaces measured at center points of opposing sides, with a full opening width on the long side.*

   A clear floor space 30 inches (914 mm) minimum by 60 inches (1524 mm) minimum shall be provided adjacent to the open face of the shower compartment.

   1.2. *42 inches (1067 mm) in width between wall surfaces, and 48 inches (1219 mm) minimum in depth with an entrance opening of 42 inches (1067 mm).*
2. ***Alternate roll-in shower compartments.*** *Alternate roll-in shower compartments shall be 36 inches (914 mm) minimum in depth and 60 inches (1524 mm) minimum in width between wall surfaces measured at center points of opposing sides. A 36-inch (914 mm) wide minimum entry shall be provided at one end of the long side of the compartment.*

1127A.5.3.2 Thresholds. *Thresholds in roll-in shower compartments shall be $^1/_2$ inch (12.7 mm) maximum in height and shall be beveled with a slope no greater than one unit vertical in two units horizontal (50-percent slope). (See Figure 11A-1F.)*

Exception: *Changes in level not exceeding $^1/_4$ inch (6.35 mm) shall be permitted to be vertical.*

1127A.5.3.3 Enclosures. *Enclosures, when provided for shower compartments, shall not obstruct controls, faucets, shower spray units and transfer from wheelchairs onto shower seats.*

1127A.5.3.4 Floor. *Shower compartment floor surfaces shall be stable, firm and slip resistant. The maximum slope of the floor shall be $^1/_4$ inch (6.35 mm) per foot (2.083 percent slope) in any direction. When drains are provided, grate openings shall be $^1/_4$ inch (6.35 mm) maximum and located flush with the floor surface.*

1127A.5.3.5 Controls. *Controls, faucets and shower spray units in shower compartments shall be operable with one hand, and shall not require tight grasping, pinching or twisting of the wrist. The force required to activate operable parts shall be 5 pounds (22.2 N) maximum. All controls and faucets shall be of a single-lever design.*

1127A.5.3.5.1 Standard roll-in shower compartments. *In standard roll-in shower compartments, operable parts of controls and faucets shall be installed on the back wall of the compartment adjacent to the seat wall, 19 inches (483 mm) minimum and 27 inches (686 mm) maximum from the seat wall.*

Operable parts of controls and faucets shall be located above the grab bar, but no higher than 48 inches (1219 mm) above the shower floor, with their centerline at 39 inches (991 mm) minimum and 41 inches (1041 mm) maximum above the shower floor.

Operable parts of the shower spray unit, including the handle, shall be installed on the back wall adjacent to the seat wall, 19 inches (483 mm) minimum and 27 inches (686 mm) maximum from the seat wall.

Operable parts of the shower spray unit, including the handle, shall be located above the grab bar, but no higher than 48 inches (1219 mm) above the shower floor (measured to the top of the mounting bracket).

1127A.5.3.5.2 Alternate roll-in shower compartments. *In alternate roll-in shower compartments, operable parts of controls and faucets shall be installed on the side wall of the compartment adjacent to the seat wall, 19 inches (483 mm) minimum and 27 inches (686 mm) maximum from the seat wall.*

Operable parts of controls and faucets shall be located above the grab bar, but no higher than 48 inches (1219 mm) above the shower floor, with their centerline at 39 inches (991 mm) minimum and 41 inches (1041 mm) maximum above the shower floor.

Operable parts of the shower spray unit, including the handle, shall be installed on the following locations:

1. *On the side wall of the compartment adjacent to the seat wall, 17 inches (432 mm) minimum and 19 inches (483 mm) maximum from the seat wall; or*
2. *On the back wall opposite the seat, 15 inches (381 mm) maximum, left or right, of the centerline of the seat.*

Operable parts of the shower spray unit, including the handle, shall be located above the grab bar, but no higher than 48 inches (1219 mm) above the shower floor.

1127A.5.3.6 Hand-held shower sprayer unit. *A flexible hand-held shower spray unit with a hose at least 59 inches (1524 mm) long that can be used both as a fixed shower head and as a hand-held shower shall be provided.*

The shower spray unit shall have an on/off control with a non-positive shut-off. If an adjustable-height shower head on a vertical bar is used, the bar shall be installed so as not to obstruct the use of grab bars.

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1127A.5.3.6.1 Sprayer unit alternative. *When accessible shower facilities are provided in areas subject to excessive vandalism, in lieu of providing the fixed flexible hose, two wall-mounted shower heads shall be installed. Each shower head shall be installed so that it can be operated independently of the other and shall have swivel angle adjustments, both vertically and horizontally. One shower head shall be located at a height of 48 inches (1219 mm) maximum above the floor.*

1127A.5.3.7 Shower compartment seats. *A seat in a standard roll-in shower compartment shall be a folding type, installed on the side wall adjacent to the controls. The seat shall extend from the back wall to a point within 3 inches (76 mm) of the compartment entry. A seat in an alternate roll-in type shower compartment shall be a folding type, installed on the front wall opposite the back wall, and shall extend from the adjacent side wall to a point within 3 inches (76 mm) of the compartment entry.*

Shower compartment seats shall comply with Section 1127A.4.4 and shall be located within 27 inches (686 mm) of the shower controls. The top of the seat shall be 17 inches (432 mm) minimum and 19 inches (483 mm) maximum above the bathroom finish floor. When folded, the seat shall not extend more than 6 inches (152 mm) from the mounting wall.

1127A.5.3.7.1 Rectangular seats. *The rear edge of a rectangular seat shall be $2^1/_2$ inches (64 mm) maximum from the seat wall. The front edge of a rectangular seat shall be 15 inches (381 mm) minimum and 16 inches (406 mm) maximum from the seat wall. The side edge of the seat shall be $1^1/_2$ inches (38 mm) maximum from the adjacent wall.*

1127A.5.3.7.2 L-shaped seats. *The rear edge of an L-shaped seat shall be $2^1/_2$ inches (64 mm) maximum from the seat wall. The front edge of an L-shaped seat shall be 15 inches (381 mm) minimum and 16 inches (406 mm) maximum from the seat wall. The rear edge of the "L" portion of the seat shall be $1^1/_2$ inches (38 mm) maximum from the wall. The front edge shall be 14 inches (356 mm) minimum and 15 inches (381 mm) maximum from the wall. The end of the "L" shall be 22 inches (559 mm) minimum and 23 inches (584 mm) maximum from the main seat wall.*

1127A.5.3.8 Grab bars. *Accessible shower compartments shall be provided with grab bars, installed in accordance with Section 1127A.5.3.8.1 or Section 1127A.5.3.8.2. Grab bars shall also comply with Section 1127A.4.*

When multiple grab bars are used, required horizontal grab bars shall be installed at the same height above the finish floor. When separate grab bars are required on adjacent walls at a common mounting height, L-shaped or U-shaped grab bars meeting the dimensional requirements of Section 1127A.5.3.8.1 or Section 1127A.5.3.8.2 shall be permitted. (See Figure 11A-9H or Figure 11A-9I.)

1127A.5.3.8.1 Standard roll-in shower compartments. *Grab bars shall be installed on the back wall and on the side wall opposite the seat. Grab bars above the seat are not permitted. Grab bars shall be installed 6 inches (152 mm) maximum from adjacent walls.*

1127A.5.3.8.2 Alternate roll-in shower compartments. *Grab bars shall be installed on the back wall and the side wall farthest from the compartment entry. Grab bars above the seat are not permitted. Grab bars shall be installed 6 inches (152 mm) maximum from adjacent walls.*

1127A.5.3.9 Soap dish. *When a soap dish is provided, it shall be located on the control wall at a maximum height of 40 inches (1016 mm) above the shower floor, and within the reach limits from the seat.*

1127A.5.3.10 Open showers. *When no separate shower compartments are provided, the shower for persons with disabilities shall be located in a corner with L-shaped grab bars extending along two adjacent walls with a folding seat adjacent to the shower controls. (See Figure 11A-9J.)*

1127A.5.3.11 Multiple showers. *When two or more accessible showers are provided within the same functional area, there shall be at least one shower constructed opposite hand from the other or others (i.e., one left-hand control versus right-hand controls).*

1127A.6 Lockers.

1127A.6.1 General. *Where lockers are provided for residents or guests, at least one locker and not less than 1 percent of all lockers shall be accessible to persons with disabilities. An accessible route not less than 36 inches (914 mm) in clear width shall be provided to these lockers. See Section 1138A for required clear space, allowable reach ranges and requirements for control and operating mechanisms.*

1127A.7 Signs.

1127A.7.1 General. *All accessible toilet and bathing facilities shall be identified by the "International Symbol of Accessibility." Signs need not be provided for facilities within a dwelling unit or guestroom.*

1127A.7.2 Identification symbols. *Doorways leading to sanitary facilities (toilet or bathing rooms) shall be identified by a geometric symbol in compliance with this section. Geometric symbols shall be centered horizontally on the door at a height of 58 inches (1473 mm) minimum and 60 inches (1524 mm) maximum above the finish floor measured to the center of the symbol. When a door is provided, the symbol shall be mounted within 1 inch (25 mm) of the vertical centerline of the door. Directional signs indicating the location of the nearest accessible toilet or bathing rooms shall be provided. Such directional signs shall comply with Section 1143.5 and shall include the International Symbol of Accessibility.*

Edges of accessibility signage shall be rounded, chamfered or eased. Corners shall have a minimum radius of $^1/_8$ inch (3.2 mm). See Section 1143A for additional signage requirements applicable to sanitary facilities.

1127A.7.2.1 Men's sanitary facilities. *Men's sanitary facilities shall be identified by an equilateral triangle, $^1/_4$ inch (6.4 mm) thick with edges 12 inches (305 mm) long and a vertex pointing upward. The triangle symbol shall contrast with the door, either light on a dark background or dark on a light background.*

1127A.7.2.2 Women's sanitary facilities. *Women's sanitary facilities shall be identified by a circle, 1/4 inch (6.4 mm) thick and 12 inches (305 mm) in diameter. The circle symbol shall contrast with the door, either light on a dark background or dark on a light background.*

1127A.7.2.3 Unisex sanitary facilities. *Unisex sanitary facilities shall be identified by a circle, 1/4 inch (6.4 mm) thick and 12 inches (305 mm) in diameter with a 1/4 inch (6.4 mm) thick triangle superimposed on the circle and within the 12-inch (305 mm) diameter. The triangle symbol shall contrast with the circle symbol, either light on a dark background or dark on a light background. The circle symbol shall contrast with the door, either light on a dark background or dark on a light background.*

1127A.8 Toilet room fixtures and accessories.

1127A.8.1 Towel, sanitary napkins, waste receptacles. *Where towel, sanitary napkins, waste receptacles and other similar dispensing and disposal fixtures are provided, at least one of each type shall be located with all operable parts, including coin slots, within 40 inches (1016 mm) from the finished floor. Controls and operating mechanisms shall comply with Section 1138A.4.*

1127A.8.2 Toilet tissue dispensers. *Toilet tissue dispensers shall be located on the wall or partition closest to the water closet, 7 inches (180 mm) minimum and 9 inches (230 mm) maximum in front of the water closet measured to the centerline of the dispenser. The outlet of the dispenser shall be below the grab bar, 19 inches (483 mm) minimum above the finish floor. The outlet of the dispenser shall not be located behind grab bars. Dispensers shall not be of a type that controls delivery or that does not allow continuous paper flow. (See Figure 11A-9B.)*

1127A.8.3 Mirrors. *Where mirrors are provided, at least one shall be accessible. Mirrors located above lavatories or countertops shall be installed with the bottom edge of the reflecting surface 40 inches (1016 mm) maximum above the finish floor. Mirrors not located above lavatories or countertops shall be installed with the bottom edge of the reflecting surface 35 inches (889 mm) maximum above the finish floor.*

1127A.9 Space allowances and reach ranges in common use areas.

Space allowances and reach ranges in common use areas shall comply with Section 1138A.

1127A.10 Common accessible laundry rooms.

1127A.10.1 General. *Where common use laundry rooms are provided, at least one of each type of appliance provided in each laundry area shall be accessible, shall be on an accessible route and shall comply with this section. Such appliances include clothes washing machines, dryers, soap dispensers and any related features such as wash sinks, tables and storage areas.*

Where laundry rooms are provided on floors of an elevator building, each laundry room shall be accessible. Where there is one laundry room on a ground floor in each building, each laundry room shall be accessible. Where there is a laundry room on the ground floor of a building and another located in the basement, it is acceptable to have only the ground floor laundry room accessible.

1127A.10.2 Clear floor space. *There shall be a minimum clear space 30 inches perpendicular by 48 inches parallel (762 mm by 1219 mm) in front of clothes washers and dryers required to be accessible. There shall be a minimum clear space 30 inches by 48 inches (762 mm by 1219 mm) provided for at least one of each type of fixture or appliance provided in the laundry room (e.g., soap dispensers, wash sinks, tables, storage areas).*

1127A.10.3 Controls and operating mechanisms. *Clothes washers and dryers including stacked clothes washers and dryers required to be accessible shall have controls and operating mechanisms (including doors, coin slots, lint screens, detergent and bleach compartments) within the reach range of a seated user. Controls and operating mechanisms shall be located no higher than 48 inches (1219 mm), and no lower than 15 inches (381 mm), above the finished floor measured to the center of the grip. If the reach is over an obstruction (for example, washer or dryer), operating mechanisms shall be located within the reach ranges specified in Section 1138A.3. Controls and operating mechanisms that do not satisfy these specifications are acceptable, provided that comparable mechanisms, controls or outlets that perform the same functions are provided within the same area and are accessible.*

Controls and operating mechanisms shall be operable with one hand and not require tight grasping, pinching or twisting of the wrist. The force required to activate controls and operating mechanisms shall be no greater than 5 pounds (22.2 N).

1127A.10.4 Washing machines and clothes dryers. *Washing machines and clothes dryers in accessible common use laundry rooms shall be front loading.*

The bottom of the opening to the laundry compartment shall be located 15 inches (381 mm) minimum and 36 inches (914 mm) maximum above the finish floor.

1127A.11 Storage.

1127A.11.1 General. *If fixed storage facilities such as cabinets, shelves, closets or drawers are provided where access is required by Sections 1.8.2.1.2 and 1102A, at least one of each type of facility provided shall comply with this section. Additional storage may be provided outside of the reach ranges specified in Section 1138A.3.*

1127A.11.2 Clear floor space. *A clear floor space at least 30 inches by 48 inches (762 mm by 1219 mm) complying with Section 1138A.1.4 that allows either a forward or parallel approach by a person using a wheelchair shall be provided at accessible storage facilities.*

1127A.11.3 Height. *Accessible storage spaces and clothes rods shall be within at least one of the reach ranges specified in Section 1138A.3. (See Figure 11A-1J and Figure 11A-1I.)*

1127A.11.4 Hardware. *Hardware for accessible storage facilities shall comply with Section 1138A.4. Touch latches and U-shaped pulls are acceptable.*

1127A.12 Fixed or built-in seating, tables and counters.

1127A.12.1 Minimum seating. *Where fixed or built-in seating, tables or counters are provided for residents or guests, 5 percent, but not less than one, shall be accessible as provided in this section.*

1127A.12.2 Clear floor space. *When seating spaces for persons in wheelchairs are provided at fixed tables or counters, clear floor space complying with Section 1138A.1.4 positioned for a forward approach shall be provided. Such clear floor space shall not overlap the required knee and toe space by more than 19 inches (483 mm). (See Figure 11A-1K.)*

1127A.12.3 Knee and toe space. *When seating for persons in wheelchairs is provided at fixed tables or counters, knee and toe space complying with Section 1138A.2 shall be provided. (See Figure 11A-1K.)*

1127A.12.4 Height of work surfaces. *The tops of tables and counters shall be 28 inches to 34 inches (711 mm to 864 mm) from the finish floor.*

Exception: *When food or drink is served for consumption at a counter exceeding 34 inches (864 mm) in height, only a portion of the main counter, 60 inches (1524 mm) minimum in length, shall be provided in compliance with this section.*

1127A.13 Electric vehicle charging stations. (Reserved)

DIVISION IV – DWELLING UNIT FEATURES

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SECTION 1128A—COVERED DWELLING UNITS

1128A.1 General. *Covered multifamily dwelling units shall be adaptable and accessible into and throughout the dwelling unit as provided in this division.*

Note: *See Sections 1101A "Application" and 1102A "Building Accessibility" for dwelling units required to comply with this division.*

SECTION 1129A —RESERVED

SECTION 1130A —ACCESSIBLE ROUTE WITHIN COVERED MULTIFAMILY DWELLING UNITS

1130A.1 General. *An accessible route shall be provided through all rooms and spaces of the dwelling unit. The accessible route shall pass through the primary entry door, and shall connect with all additional exterior doors, required clear floor spaces at kitchen appliances and bathroom fixtures. For the purpose of this section, "accessible routes" may include hallways, corridors and ramps.*

Exception: *An accessible route is not required from the interior of the unit into a basement or garage, except as provided in Section 1105A.1.*

1130A.2 Width. *The accessible route into and throughout covered multifamily dwelling units shall be at least 36 inches (914 mm) wide.*

SECTION 1131A —CHANGES IN LEVEL ON ACCESSIBLE ROUTES

1131A.1 Changes in level not exceeding $^1/_2$ inch. *Abrupt changes in level along any accessible route shall not exceed $^1/_2$ inch (12.7 mm). When changes in level do occur, they shall be beveled with a slope no greater than 1 unit vertical in 2 units horizontal (50-percent slope). Changes in level not exceeding $^1/_4$ inch (6.35 mm) may be vertical.*

1131A.2 Changes greater than $^1/_2$ inch. *Changes in level greater than $^1/_2$ inch (12.7 mm) shall be made by means of a sloped surface not greater than 1 unit vertical in 20 units horizontal (5-percent slope), or a ramp, elevator or platform (wheelchair) lift. See Section 1122A for ramps and Section 1124A.11 for platform (wheelchair) lifts.*

SECTION 1132A —DOORS

1132A.1 Primary entry doors and required exit doors. *The width and height of primary entry doors and all required exit doors shall comply with Section 1126A.1. The requirements of Sections 1126A.3 shall apply to maneuvering clearances at the side of the door exposed to common or public use spaces (e.g., entry or exit doors which open from the covered multifamily dwelling unit into a corridor, hallway or lobby, or directly to the outside).*

1132A.2 Interior doors and secondary exterior doors. *Except as allowed by Section 1109A.2, interior doors intended for user passage and secondary exterior doors shall comply with this section. The provisions of this section shall apply to the dwelling unit side of doors leading from the interior of the dwelling unit to an unfinished basement or an attached garage.*

1132A.3 Width and height of interior doors and secondary exterior doors. *Doors shall comply with the following:*

1. *Doors shall not be less than 6 feet 8 inches (2032 mm) in height.*
2. *Swinging doors shall provide a net clear opening width of not less than 32 inches (813 mm), measured with the door or doors positioned at an angle of 90 degrees from the closed position.*
3. *Swinging doors shall be capable of opening at least 90 degrees.*
4. *A nominal 32-inch (813 mm) clear opening provided by a standard 6-foot wide (1829 mm) sliding patio door assembly is acceptable.*
5. *A pair of doors, manual or automatic, must have at least one leaf which provides a clear width of not less than 32 inches (813 mm), measured with the door positioned at an angle of 90 degrees from its closed position.*
6. *The width of any component in the means of egress system shall not be less than the minimum width required by Section 1005.*

1132A.4 Level floor or landing. *See also Chapter 10. The floor or landing on each side of a door shall be level. Primary entry doors, required exit doors or secondary exterior doors with changes in height between the interior surface or floor level and the exterior surface or floor level shall comply with the following:*

1. *Exterior landings of impervious construction (e.g., concrete, brick, flagstone) serving primary entry doors and required exit doors are limited to not more than $^1/_2$ inch (12.7 mm) of change in height between floor surfaces. Changes in level shall comply with Section 1131A.*
2. *Exterior landings of pervious construction (e.g., wood decking with spaces) shall be the same level as the interior landing, except that secondary exterior doors may have no more than $^1/_2$ inch (12.7 mm) of change in height between floor surfaces. Changes in level shall comply with Section 1131A.*
3. *Secondary exterior doors onto decks, patios or balcony surfaces constructed of impervious materials (e.g., concrete, brick, flagstone) may have a maximum change in height from the interior landing of 4 inches (101.6 mm). Changes in height greater than $^1/_2$ inch (12.7 mm) shall be accomplished by means of a ramp complying with Section 1114A or by means of a platform constructed to the level of the floor as illustrated in Figure 11A-8J.*
4. *Secondary exterior doors onto decks, patios or balcony surfaces constructed of impervious materials (e.g., concrete, brick, flagstone) may have a maximum change in height from the interior landing of 1 inch (25.4 mm), provided a ramp with a maximum slope of 1:8 is permanently installed. (See Figure 11A-8K.)*
5. *In buildings containing covered multifamily dwelling units, the floor or landing immediately outside the entry may be sloped up to $^1/_4$ inch (6.35 mm) per foot (12 inches) (305 mm), in a direction away from the primary entrance of the dwelling unit for drainage.*

1132A.4.1 Thresholds. *Thresholds at the primary entry and required exit doors shall be no higher than $^1/_2$ inch (12.7 mm). Thresholds at secondary exterior doors, including sliding door tracks, shall be no higher than $^3/_4$ inch (19.05 mm). Changes in height at interior door thresholds (e.g., floor material changes at door thresholds) shall not exceed $^1/_2$ inch (12.7 mm). Thresholds shall comply with the following:*

1. *Thresholds with a change in height of not more than $^1/_4$ inch (6.35 mm) may be vertical.*
2. *Thresholds with a change in height between $^1/_4$ inch (6.35 mm) and $^3/_4$ inch (19.05 mm) shall be beveled with a slope no greater than 1 unit vertical in 2 units horizontal (50-percent slope).*

1132A.5 Maneuvering clearances at doors.

1132A.5.1 General. *The floor or landing on the dwelling unit side of the primary entry door and any required exit door shall have a minimum length of not less than 44 inches (1118 mm). Section 1126A.3 shall apply to maneuvering clearances at the side of the door exposed to common or public use spaces.*

Maneuvering clearances at interior doors shall provide a minimum length on both sides of the door of at least 42 inches (1067 mm) measured at a right angle to the plane of the door in its closed position.

Exception: *A 39-inch (991 mm) length is acceptable at interior doors when a minimum clear opening width of 34 inches (864 mm) is provided.*

1132A.5.2 Strike edge maneuvering space at doors. *The width of the level area on the side to which the door swings shall extend 18 inches (457 mm) past the strike edge for all doors. The width of the level area at the exterior side of the primary entry door and any required exit doors shall comply with Section 1126A.*

Notes:

1. *See Section 1134A for bathrooms that are required to be accessible.*
2. *Twenty-four inches (610 mm) is preferred for strike edge clearance.*

1132A.6 Closer-effort to operate doors. *Maximum effort to operate doors shall not exceed 8 $^1/_2$ pounds (38 N) for exterior doors and 5 pounds (22 N) for interior doors, such pull or push effort being applied at right angles to hinged doors and at the center plane of sliding or folding doors. Compensating devices or automatic door operators may be utilized to meet these standards. When fire doors are required, the maximum effort to operate the door may be increased to the minimum allowable by the appropriate enforcement agency, not to exceed 15 pounds (66.7 N).*

1132A.7 Type of lock or latch. *The type of latch and lock required for all doors shall be in accordance with Section 1132A.8 and Chapter 10, Section 1010.*

1132A.8 Hand-activated door hardware. *Hand-activated door latching, locking and opening hardware shall be centered between 30 inches (762 mm) and 44 inches (1118 mm) above the floor. Latching and locking doors that are hand-activated and on an accessible route shall be operable with a single effort by lever-type hardware, panic bars, push-pull activating bars or other hardware designed to provide passage without requiring the ability to grasp the opening hardware. Locked exit doors shall operate consistent with Section 1132A.6, in the direction of egress.*

1132A.8.1 Lever-type hardware. *The lever or lever of actuated latches or locks shall be curved with a return to within $^1/_2$ inch (12.7 mm) of the door to prevent catching on the clothing of persons during egress in Group R and U occupancies with an occupant load greater than 10.*

1132A.9 Smooth surface. *Swinging door or gate surfaces within 10 inches (254 mm) of the finish floor or ground measured vertically shall have a smooth surface on the push side extending the full width of the door or gate. Parts creating horizontal or vertical joints in*

these surfaces shall be within $^{1}/_{16}$ inch (1.6 mm) of the same plane as the other and be free of sharp or abrasive edges. Cavities created by added kick plates shall be capped.

Exceptions:

1. *Automatic doors.*
2. *Tempered glass doors without stiles and having a bottom rail or shoe with the top leading edge tapered at 60 degrees minimum from the horizontal.*
3. *Doors or gates that do not extend to within 10 inches (254 mm) of the finish floor.*

1132A.10 Door signal devices. *Every primary entrance to a covered multifamily dwelling unit shall be provided with a door buzzer, bell, chime or equivalent. The activating mechanism shall be mounted a maximum of 48 inches (1219 mm) above the floor and connected to permanent wiring.*

SECTION 1133A—KITCHENS

1133A.1 General. *Kitchens shall be on an accessible route and shall comply with this section. (See Figure 11A-10A.)*

1133A.2 Clear floor space. *Clear floor space at kitchens shall comply with the following:*

1. *A clear floor space at least 30 inches (762 mm) by 48 inches (1219 mm) that allows a parallel approach by a person in a wheelchair shall be provided at the range or cooktop.*
2. *A clear floor space at least 30 inches (762 mm) by 48 inches (1219 mm) that allows either a parallel or forward approach shall be provided at the kitchen sink and all other fixtures or appliances including the oven, dishwasher, refrigerator/freezer and trash compactor.*
3. *A clear floor space at least 30 inches (762 mm) by 48 inches (1219 mm) that allows either a parallel or a forward approach shall be provided at the work surface required by Section 1133A.4.*
4. *The centerline of the 30-inch (762 mm) by 48-inch (1219 mm) clear floor space provided for parallel or forward approach shall be aligned with the centerline of the work surface, appliance or fixture.*

1133A.2.1 Clear width. *Kitchens shall have a minimum clear width measured between any cabinet, countertop or the face of any appliance (excluding handles and controls) that projects into the kitchen and the opposing cabinet, countertop, appliance or wall as follows:*

1. *U-shaped kitchens, designed with parallel approach at a range or cooktop located at the base of the U, shall have a minimum clear width of at least 60 inches (1524 mm). (See Figure 11A-10A.)*
2. *U-shaped kitchens, designed with a cooktop or sink located at the base of the U, which provides a knee and toe space in accordance with Section 1133A.7 to allow for a forward approach, shall have a clear width of at least 48 inches (1219 mm). (See Figure 11A-10A.)*
3. *All other kitchen designs shall provide a minimum clear width of at least 48 inches (1219 mm). (See Figure 11A-10A.)*

1133A.3 Removable base cabinets. *Sinks and work surfaces required by Section 1133A.4 (see Item 1 and Item 2) shall be provided with knee and toe space complying with Section 1133A.7. Base cabinets (including toeboard and shelving) directly under kitchen sinks and work surfaces shall be removable without the use of specialized tools or specialized knowledge in order to provide knee and toe space. The finish floor beneath kitchen sinks and work surfaces shall be extended to the wall.*

1133A.4 Countertops. *Kitchen countertops shall comply with this section and shall be provided with the following:*

1. *A minimum linear length of 30 inches (762 mm) of countertop shall be provided for the kitchen sink installation.*
2. *A minimum linear length of 30 inches (762 mm) of countertop shall be provided for a work surface.*
3. *Sinks and work surfaces may be a single integral unit a minimum of 60 inches (1524 mm) in length, or be separate components.*

   Exception: *Two 15-inch (381 mm) wide minimum breadboards may be provided in lieu of the required 30 inches (762 mm) of countertop work surface.*

1133A.4.1 Repositionable countertops. *Repositionable countertops shall be provided in a minimum of 5 percent of the covered multifamily dwelling units. Repositionable countertops shall comply with the following:*

1. *Sinks and work surfaces required by Section 1133A.4 shall be designed to enable repositioning to a minimum height of 28 inches (711 mm).*
2. *Base cabinets directly under sinks and work surfaces shall be removable as required in Section 1133A.3.*
3. *The sides of adjacent cabinets and the back wall, which may become exposed to moisture or food handling when a countertop is lowered, shall be constructed of durable, nonabsorbent materials appropriate for such uses.*
4. *Finished flooring shall be extended to the wall beneath the sink and work surface.*

   Exceptions:

   1. *Stone, cultured stone and tiled countertops may be used without meeting the repositioning requirements.*
   2. *Two 15-inch (381 mm) wide minimum breadboards may be provided in lieu of the required 30 inches (762 mm) of countertop work surface, and used without meeting the repositioning requirements.*

1133A.5 Lower shelving. *Lower shelving and/or drawer space shall be provided in the kitchen at a height of no more than 48 inches (1219 mm) above the floor.*

1133A.6 Kitchen sink faucet controls. *Faucet controls and operating mechanisms shall be operable with one hand and shall not require tight grasping, pinching or twisting of the wrist.*

The force required to activate controls shall be no greater than 5 pounds (22.2 N). Lever-operated, push-type and electronically controlled mechanisms are examples of acceptable designs. Self-closing valves are allowed if the faucet remains open for at least 10 seconds.

1133A.7 Knee and toe space. *Knee and toe space, when required by Section 1133A, shall comply with Section 1138A.2 and the following:*

1. *The knee and toe space shall be clear and unobstructed, or removable base cabinets in compliance with Section 1133A.3 shall be provided.*
2. *The knee and toe space shall be 30 inches (762 mm) wide minimum, centered on the sink, countertop or appliance.*
3. *A clear floor space shall not extend into the knee and toe space more than 19 inches (483 mm).*

1133A.7.1 Plumbing protection. *Water supply and drain pipes under kitchen sinks shall be insulated or otherwise covered to protect against contact. There shall be no sharp or abrasive surfaces under kitchen sinks.*

SECTION 1134A—BATHING AND TOILET FACILITIES

1134A.1 General. *All bathrooms, bathing and toilet facilities within covered multifamily dwelling units shall comply with this section.*

1134A.2 Number of complying bathrooms. *Bathrooms shall be designed to comply with one of the following options:*

Option 1. *All bathrooms within the dwelling unit shall be designed to comply with the following:*

1. *Toilet, bathing and shower facilities shall comply with Section 1134A.4.*
2. *Bathtubs shall comply with Section 1134A.5.*
3. *Showers shall comply with Section 1134A.6.*
4. *Water closets shall comply with Section 1134A.7.*
5. *Lavatories, vanities, mirrors and towel fixtures shall comply with Section 1134A.8.*
6. *Bathrooms shall be provided with an accessible route into and through the bathroom.*
7. *If a door is provided, it shall comply with the requirements of Section 1132A.5.*
8. *A minimum 18-inch (457 mm) clear maneuvering space shall be provided on the swing side of the door at the strike edge of the door.*
9. *Switches, outlets and controls shall comply with Section 1142A.*
10. *Reinforced walls to allow for the future installation of grab bars around the toilet, tub and shower shall comply with Sections 1134A.5 for bathtubs, 1134A.6 for showers and 1134A.7 for water closets.*

Option 2. *Only one bathroom within the dwelling unit shall be designed to comply with the following:*

1. *Toilet, bathing and shower facilities shall comply with Section 1134A.4.*
2. *Bathtubs shall comply with Section 1134A.5.*
3. *Showers shall comply with Section 1134A.6.*
4. *Water closets shall comply with Section 1134A.7.*
5. *Lavatories, vanities, mirrors and towel fixtures shall comply with Section 1134A.8.*
6. *Where both a tub and shower are provided in the bathroom, at least one shall be made accessible. Additional requirements apply to dwelling units containing two or more bathrooms when a bathtub is provided as the accessible bathing fixture.*

   Where two or more bathrooms are provided within the same dwelling unit and a bathtub is installed to comply with Option 2, Item 6 in one bathroom and a shower stall is provided in a subsequent bathroom, both the bathtub selected to comply with Option 2, Item 6 and at least one shower stall within the dwelling unit shall meet all the applicable accessibility requirements provided in Section 1134A. (See Section 1134A.5 for bathtubs, or Section 1134A.6 for showers.)
7. *When two or more lavatories are provided, at least one shall be made accessible and comply with Section 1134A.8.*
8. *Bathrooms shall be provided with an accessible route into and through the bathroom.*
9. *If a door is provided, it shall comply with the requirements of Section 1132A.5.*
10. *A minimum 18-inch (457 mm) clear maneuvering space shall be provided on the swing side of the door at the strike edge of the door.*
11. *Switches, outlets and controls shall comply with Section 1142A.*
12. *Reinforced walls to allow for the future installation of grab bars around the toilet, tub and shower shall comply with Sections 1134A.5 for bathtubs, 1134A.6 for showers and 1134A.7 for water closets.*

When Option 2 is used, all additional bathrooms must comply with Items 8 through 12 above.

1134A.3 Powder rooms. *All powder rooms shall be designed to comply with Section 1134A.2, Option 2, Items 8 through 12. When the powder room is the only toilet facility located on an accessible level, it shall comply with the Option 2 items listed above, plus all additional requirements located in Sections 1134A.4, 1134A.7 and 1134A.8.*

1134A.4 Sufficient maneuvering space. *Bathing and toilet facilities required to be adaptable shall provide sufficient maneuvering space for a person using a wheelchair or other mobility aid to enter and close the door, use the fixtures, reopen the door and exit.*

Where the door swings into the bathroom or powder room, there shall be a clear maneuvering space outside the swing of the door of at least 30 inches by 48 inches (762 mm by 1219 mm) within the room. The clear maneuvering space shall allow the user to position a wheelchair or other mobility aid clear of the path of the door as it is closed and to permit use of fixtures.

Doors may swing into the required clear space at any fixture when a clear maneuvering space is provided outside the swing arc of the door so it can be closed.

Maneuvering spaces may include any knee space or toe space available below bathroom fixtures.

1134A.5 Bathtubs. *Bathtubs required to be accessible shall comply with this section.*

1. ***Floor space.*** *There shall be a minimum clear floor space 48 inches parallel by 30 inches perpendicular (1219 mm by 762 mm) to the side of a bathtub or bathtub-shower combination to provide for the maneuvering of a wheelchair and transfer to and from the bathing facilities. The controls shall be on the wall at the foot of the bathtub. The edge of the clear floor space shall be flush with the control wall surface. The area under a lavatory, located at the control end of the tub, may be included in the clear floor space provided the lavatory is 19 inches (483 mm) maximum deep, and the knee and toe space comply with Section 1134A.8. Cabinets under lavatories and toilets shall not encroach into the clear floor space.*
2. ***Reinforced walls for grab bars.*** *A bathtub installed without surrounding walls shall provide reinforced areas for the installation of floor-mounted grab bars.*

   Where a bathtub is installed with surrounding walls, grab bar reinforcement shall be located on each end of the bathtub, 32 inches to 38 inches (813 mm to 965 mm) above the floor, extending a minimum of 24 inches (610 mm) from the front edge of the bathtub toward the back wall of the bathtub. The grab bar reinforcement shall be a minimum of 6 inches (152.4 mm) nominal in height. (See Figure 11A-9G.)

   Grab bar reinforcement shall be installed on the back wall of the bathtub a maximum of 6 inches (152.4 mm) above the bathtub rim extending upward to at least 38 inches (965 mm) above the floor. Grab bar backing shall be installed horizontally to permit the installation of a 48-inch (1219 mm) grab bar with each end a maximum of 6 inches (152.4 mm) from the end walls of the bathtub. The grab bar reinforcement shall be a minimum of 6 inches (152.4 mm) nominal in height.
3. ***Bathtub controls.*** *Faucet controls and operation mechanisms shall be operable with one hand and shall not require tight grasping, pinching or twisting of the wrist.*

   The force required to activate controls shall be no greater than 5 pounds (22.2 N). Lever operated, push type and electronically controlled mechanisms are examples of acceptable designs.
4. ***Shower unit.*** *A shower spray unit is not required in bathtubs.*
5. ***Bathtub enclosures.*** *Doors and panels of bathtub enclosures shall be substantially constructed from approved, shatter-resistant materials. Hinged doors shall open outward. Glazing used in doors and panels of bathtub enclosures shall be fully tempered, laminated safety glass or approved plastic. When glass is used, it shall have minimum thickness of not less than $^1/_8$ inch (3.17 mm) when fully tempered, or $^1/_4$ inch (6.35 mm) when laminated, and shall pass the test requirements of this part, Chapter 24, Glass and Glazing. Plastics used in doors and panels of bathtub enclosures shall be of a shatter-resistant type.*

1134A.6 Showers. *Showers required to be accessible shall comply with this section.*

1. ***Size.*** *When one or more shower stalls are provided within the same dwelling units, at least one shower stall comply with one of the following requirements.*
   - *1.1. The shower stall shall measure at least 42 inches wide by 48 inches deep (1067 mm by 1219 mm) with an entrance opening of at least 36 inches (914 mm); or*
   - *1.2. The shower stall shall measure at least 30 inches deep by 60 inches wide (762 mm by 1524 mm) with an entrance opening of at least 60 inches (1524 mm). A water closet may project a maximum of 12 inches (305 mm) into the opening, provided that a minimum of 36 inches (914 mm) clear space is maintained between the water closet and the shower wall as illustrated in Figure 11A-9L; or*
   - *1.3. Other shower stall configurations shall measure at least 36 inches deep by 60 inches wide (914 mm by 1524 mm) with an entrance opening of at least 36 inches (914 mm) when a wall is installed on the opening side.*
2. ***Slope.*** *The maximum slope of the shower floor shall be $^1/_2$ inch (12.7 mm) per foot in any direction and shall slope to a drain. The floor surfaces shall be of Carborundum or grit-faced tile or of material providing equivalent slip resistance.*
3. ***Floor space****. A clear maneuvering space at least 30 inches in width by 48 inches in length (762 mm by 1219 mm) shall be located outside the shower, flush and parallel to the control wall.*
4. ***Reinforced walls for grab bars.*** *Grab bar reinforcement shall be installed continuous in the walls of showers 32 inches to 38 inches (813 mm to 965 mm) above the floor. The grab bar reinforcement shall be a minimum of 6 inches (152.4 mm) nominal in height.*

   Glass-walled shower stalls shall provide reinforcement for installation of floor-mounted or ceiling-mounted grab bars.
5. ***Thresholds.*** *When a threshold is used, it shall be a maximum of 2 inches (50.8 mm) in height and have a beveled or sloped angle not exceeding 1 unit vertical in 2 units horizontal (26.6 degrees from the horizontal). Thresholds $^1/_2$ inch (12.7 mm) or less in height may have a beveled or sloped angle not exceeding 1 unit vertical in 1 unit horizontal (45 degrees from the horizontal).*
6. ***Shower controls.*** *Faucet controls and operation mechanisms shall be operable with one hand and shall not require tight grasping, pinching or twisting of the wrist. The force required to activate controls shall be no greater than 5 pounds (22.2 N). Lever operated, push-type and electronically controlled mechanisms are examples of acceptable designs.*

7. ***Shower enclosures.*** *Doors and panels of shower enclosures shall be substantially constructed from approved, shatter-resistant materials. Hinged shower doors shall open outward. Glazing used in doors and panels of shower enclosures shall be fully tempered, laminated safety glass or approved plastic. When glass is used, it shall have minimum thickness of not less than $^1/_8$ inch (3.17 mm) when fully tempered, or $^1/_4$ inch (6.35 mm) when laminated, and shall pass the test requirements of this part, Chapter 24, Glass and Glazing. Plastics used in doors and panels of shower enclosures shall be of a shatter-resistant type.*

1134A.7 Water closets. *Water closets in bathrooms or powder rooms required to be accessible shall comply with this section.*

1. ***Floor space and location.*** *The minimum floor space provided at a water closet shall be 48 inches (1219 mm) in clear width. The clear floor space shall extend past the front edge of the water closet at least 36 inches (914 mm). See Figure 11A-9M.*

   Exception: *The 48-inch (1219 mm) minimum clear width may be reduced to 36 inches (914 mm) for lavatories, cabinets, wing walls or privacy walls located immediately adjacent to a water closet which extend no more than 24 inches (610 mm) in depth.*

Water closets shall be located within bathrooms in a manner that permits a grab bar to be installed on at least one side of the fixture. The centerline of the water closet shall be 17 inches (432 mm) minimum to 18 inches (457 mm) maximum from a grab bar wall or partition. In locations where water closets are adjacent to non-grab bar walls, vanities, lavatories or bathtubs, the centerline of the fixture shall be a minimum of 18 inches (457 mm) from the obstacle.

2. ***Reinforced walls for grab bars.*** *Where the water closet is not placed adjacent to a side wall capable of accommodating a grab bar, the bathroom shall have provisions for installation of floor-mounted, foldaway or similar alternative grab bars.*

Where the water closet is placed adjacent to a side wall, reinforcement shall be installed on both sides or one side and the back. If reinforcement is installed at the back, it shall be installed between 32 inches (813 mm) and 38 inches (965 mm) above the floor. The grab bar reinforcement shall be a minimum of 6 inches (152.4 mm) nominal in height. The backing shall be a minimum of 40 inches (1016 mm) in length.

Reinforcement installed at the side of the water closet shall be installed 32 inches to 38 inches (813 mm to 965 mm) above the floor. The reinforcement shall be installed a maximum of 12 inches (305 mm) from the rear wall and shall extend a minimum of 26 inches (660 mm) in front of the water closet. The grab bar reinforcement shall be a minimum of 6 inches (152.4 mm) nominal in height.

3. ***Seat height.*** *The minimum height of water closet seats shall be 15 inches (381 mm) above the floor.*
4. ***Water closet controls.*** *Water closet controls shall be mounted no more than 44 inches (1118 mm) above the floor. The force required to activate controls shall be no greater than 5 pounds (22.2 N).*

1134A.8 Lavatories, vanities, mirrors and towel fixtures. *Bathrooms or powder rooms required to be accessible shall have at least one accessible lavatory. Where mirrors and towel fixtures are provided, at least one of each shall be accessible.*

1. ***Location.*** *Vanities and lavatories shall be installed with the centerline of the fixture a minimum of 18 inches (457 mm) horizontally from an adjoining wall or fixture to allow for forward approach. When parallel approach is provided, lavatories shall be installed with the centerline of the fixture a minimum of 24 inches (610 mm) horizontally from an adjoining wall or fixture. The top of the fixture rim shall be a maximum of 34 inches (864 mm) above the finished floor.*
2. ***Floor space.*** *A clear maneuvering space at least 30 inches by 48 inches (762 mm by 1219 mm) shall be provided at lavatories and shall be centered on the lavatory.*
3. ***Cabinets.*** *Cabinets under lavatories are acceptable provided the bathroom has space to allow a parallel approach by a person in a wheelchair and the lavatory cabinets are designed with adaptable knee and toe space.*
4. ***Knee and toe space.*** *Knee and toe space shall be provided by one of the following:*
   - *4.1. The space beneath the lavatory shall be left clear and unobstructed;*
   - *4.2. Any cabinet beneath the lavatory shall be removable without the use of specialized knowledge or specialized tools; or*
   - *4.3. Doors to the cabinet beneath the lavatory shall be removable or openable to provide the required unobstructed knee and toe space.*

   The knee and toe space shall be centered on the fixture, and shall comply with Section 1138A.2. The clear floor space required by Item 2 shall not extend into the knee and toe space more than 19 inches (483 mm). (See Figure 11A-9D.)
5. ***Finished floor.*** *The finished floor beneath the lavatory shall be extended to the wall.*
6. ***Plumbing protection.*** *Water supply and drain pipes under lavatories shall be insulated or otherwise covered to protect against contact. There shall be no sharp or abrasive surfaces under lavatories.*
7. ***Lavatory faucet controls.*** *Faucet controls and operation mechanisms shall be operable with one hand and shall not require tight grasping, pinching or twisting of the wrist.*

   The force required to activate controls shall be no greater than 5 pounds (22.2 N). Lever operated, push-type and electronically controlled mechanisms are examples of acceptable designs. Self-closing valves are allowed if the faucet remains open for at least 10 seconds.
8. ***Mirrors and towel fixtures.*** *Where mirrors or towel fixtures are provided they shall be mounted with the bottom edge no higher than 40 inches (1016 mm) from the floor.*

SECTION 1135A —LAUNDRY ROOMS

1135A.1 General. *If clothes washing machines and clothes dryers are provided in covered multifamily dwelling units, one of each type of appliance shall be provided. Where front-loading clothes washers are not provided, management shall provide assistive devices, on request of the occupant, to permit the use of top-loading clothes washers.*

SECTION 1136A —ELECTRICAL RECEPTACLE, SWITCH AND CONTROL HEIGHTS

1136A.1 Receptacle heights. *Electrical receptacle outlets on branch circuits of 30 amperes or less and communication system receptacles shall be located no more than 48 inches (1219 mm) measured from the top of the receptacle outlet box nor less than 15 inches (381 mm) measured from the bottom of the receptacle outlet box to the level of the finished floor or working platform. If the reach is over a physical barrier or an obstruction (for example, a kitchen base cabinet), receptacles shall be located within the reach ranges specified in Section 1138A.3. Physical barriers and obstructions shall not extend more than 25 inches (635 mm) from the wall beneath the receptacle.*

Cabinets shall be allowed to extend 24 inches from the wall beneath a control or switch with an additional countertop extension of $1^1/_2$ inches for a maximum dimension of $25^1/_2$ inches (647.7 mm) in depth.

Receptacle outlets that do not satisfy these specifications are acceptable provided that comparable receptacle outlets, that perform the same functions, are provided within the same area and are accessible.

Exceptions:

1. *Receptacle outlets installed as part of permanently installed baseboard heaters are exempt.*
2. *Required receptacle outlets shall be permitted in floors when adjacent to sliding panels or walls.*
3. *Baseboard electrical outlets used in relocatable partitions, window walls or other electrical convenience floor outlets are not subject to the minimum height requirements.*
4. *This section shall not apply to existing buildings when the enforcing agency determines that compliance with these standards would create an unreasonable hardship.*

1136A.2 Switch and control heights. *Controls or switches intended to be used by the occupant of the room or area to control lighting and receptacle outlets, appliances, alarms or cooling, heating and ventilating equipment shall be located no more than 48 inches (1219 mm) measured from the top of the outlet box nor less than 15 inches (381 mm) measured from the bottom of the outlet box to the level of the finished floor or working platform. If the reach is over a physical barrier or an obstruction (for example, a kitchen base cabinet) switches and controls shall be located within the reach ranges specified in Section 1138A.3. Physical barriers or obstructions shall not extend more than 25 inches (635 mm) from the wall beneath a control or switch.*

Cabinets shall be allowed to extend 24 inches from the wall beneath a control or switch with an additional countertop extension of $1^1/_2$ inches for a maximum dimension of $25^1/_2$ inches (647.7 mm) in depth.

Switches and controls that do not satisfy these specifications are acceptable provided that comparable controls or outlets, that perform the same functions, are provided within the same area and are accessible.

Exception: *Appliances (e.g., kitchen stoves, dishwashers, range hoods, microwave ovens and similar appliances) which have controls located on the appliance.*

DIVISION V – FEATURES COMMON TO EXTERIOR AND INTERIOR OF BUILDINGS

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SECTION 1137A —OTHER FEATURES AND FACILITIES

1137A.1 General. *This division shall apply to features and facilities of common use areas on accessible floors or sites.*

Note: *The provisions in this division are not applicable to dwelling units, unless otherwise specified.*

SECTION 1138A —SPACE ALLOWANCES AND REACH RANGES

1138A.1 Space allowances.

1138A.1.1 Single wheelchair passage width. *The minimum clear width for single wheelchair passage shall be 36 inches (914 mm) continuously. (See Figure 11A-1E.)*

See Section 1113A for minimum clear width of sidewalks, and Section 1120A for minimum clear width of interior accessible routes.

Exception: *32 inches (813 mm) in width is acceptable at a point not to exceed 24 inches (610 mm) in length. The segments with reduced width shall be separated by segments that are 48 inches (1219 mm) long minimum and 36 inches (914 mm) wide minimum.*

1138A.1.2 Width for two wheelchairs passing. *The minimum width for two wheelchairs to pass is 60 inches (1524 mm) (See Figure 11A-1E).*

An accessible route (exterior and interior) with a clear width less than 60 inches (1524 mm) shall provide passing spaces at intervals of 200 feet (60 960 mm) maximum. Passing spaces shall be either: a space 60 inches (1524 mm) minimum by 60 inches (1524 mm) minimum; or, an intersection of two walking surfaces providing a T-shaped space complying with Section 1138A.1.3.1, where the base and arms of the T-shaped space extend 48 inches (1219 mm) minimum beyond the intersection. (See Figure 11A-1L.)

1138A.1.3 Wheelchair turning space. *The space required for a wheelchair to make a 180-degree turn shall be a circular clear space of 60 inches (1524 mm) diameter minimum (See Figure 11A-1D(a)); or a T-shaped space complying with Section 1138A.1.3.1. The circular turning space shall be permitted to include knee and toe clearance complying with Section 1138A.2.*

If a person in a wheelchair must make a turn around an obstruction, the minimum clear width of the accessible route shall be as required in Section 1138A.1.5.

1138A.1.3.1 T-shaped turning space. *A T-shaped turning space shall be within a 60 inch (1524 mm) square minimum with arms and base 36 inches (914 mm) wide minimum. Each arm of the T shall be clear of obstructions 12 inches (305 mm) minimum in each direction, and the base shall be clear of obstructions 24 inches (610 mm) minimum. The space shall be permitted to include knee and toe clearance complying with Section 1138A.2 only at the end of either the base or one arm. (See Figure 11A-1D (b).)*

1138A.1.3.2 Surfaces of turning spaces. *Turning spaces for wheelchairs shall be stable, firm, slip resistant, and shall comply with Section 1110A.3 or Section 1119A.2. Changes in level are not permitted. Slopes not steeper than 1:48 shall be permitted.*

1138A.1.4 Clear floor or ground space for wheelchairs.

1138A.1.4.1 Size and approach. *The minimum clear floor or ground space shall be 30 inches by 48 inches (762 mm by 1219 mm). The minimum clear floor or ground space may be positioned for forward or parallel approach to an object (See Figure 11A-1G). Clear floor or ground space may be part of the knee and toe space required under some objects unless otherwise specified.*

1138A.1.4.2 Relationship of maneuvering clearances to wheelchair spaces. *One full unobstructed side of the clear floor or ground space for a wheelchair shall adjoin an accessible route or adjoin another wheelchair clear floor space.*

If a clear floor space is located in an alcove or otherwise confined on all or a part of three sides, additional maneuvering clearances shall be provided in accordance with the following: (See Figure 11A-1H).

1. ***Forward approach.*** *Alcoves shall be 36 inches (914 mm) wide minimum when the depth exceeds 24 inches (610 mm).*
2. ***Parallel approach.*** *Alcoves shall be 60 inches (1524 mm) wide minimum when the depth exceeds 15 inches (381 mm).*

1138A.1.4.3 Surfaces of wheelchair spaces. *Clear floor or ground spaces for wheelchairs shall be stable, firm, slip resistant, and shall comply with Section 1110A.3 or Section 1119A.2. Changes in level are not permitted. Slopes not steeper than 1:48 shall be permitted.*

1138A.1.4.3.1 Gratings. *Gratings located in ground and floor surfaces along accessible routes shall be limited to spaces no greater than $^1/_2$-inch (12.7 mm) wide in one direction. If gratings have elongated openings, they shall be placed so that the long dimension is perpendicular to the dominant direction of traffic.*

1138A.1.5 Turn around obstruction. *When the accessible route makes a 180 degree turn around an element which is less than 48 inches (1219 mm) wide, clear width shall be 42 inches (1067 mm) minimum approaching the turn, 48 inches (1219 mm) minimum at the turn and 42 inches (1067 mm) minimum leaving the turn. When the clear width at the turn is 60 inches (1524 mm) minimum, the clear width when approaching and when leaving the turn shall be 36 inches (914 mm) minimum. (See Figure 11A-1C (b).)*

When the accessible route makes a 90 degree turn around an element which is more than 48 inches (1219 mm) wide, clear width shall be 36 inches (914 mm) minimum approaching the turn, at the turn and leaving the turn. (See Figure 11A-1C (a).)

1138A.2 Knee and toe space. *When space beneath an accessible element is included as part of a clear floor space, or turning space, the space shall comply with this section. Additional space shall not be prohibited beneath an element but shall not be considered as part of the clear floor space or turning space. (See Figure 11A-9D.)*

1138A.2.1 Knee space. *Space under an element between 9 inches (229 mm) and 27 inches (686 mm) above the finish floor shall be considered knee space. The knee space shall be clear and unobstructed.*

Exceptions:

1. *For lavatories required to be accessible, the knee space shall be at least 29 inches (737 mm) high at the front face and reducing to not less than 27 inches (686 mm) at a point 8 inches (203.2 mm) back from the front edge.*
2. *For lavatories and sinks required to be accessible, the dip of the overflow shall not be considered in determining knee and toe clearances.*

1138A.2.1.1 Minimum width. *Knee space shall be 30 inches (762 mm) wide minimum.*

1138A.2.1.2 Maximum depth. *Knee space shall extend 25 inches (635 mm) maximum under an element at 9 inches (229 mm) above the finish floor.*

1138A.2.1.3 Minimum depth. *When knee space is required under an element as part of a clear floor space, the knee space shall be 11 inches (279 mm) deep minimum at 9 inches (229 mm) above the finish floor, and 8 inches (203 mm) deep minimum at 27 inches (686 mm) above the finish floor, measured from the front edge of the element.*

Exceptions:

1. *Combined knee and toe space shall extend 19 inches (483 mm) minimum under sinks required to be accessible.*
2. *Combined knee and toe space shall extend 19 inches (483 mm) minimum under built-in dining and work surfaces required to be accessible.*

1138A.2.1.4 Clearance reduction. *Between 9 inches (229 mm) and 27 inches (686 mm) above the finish floor, the knee space shall be permitted to be reduced at a rate of 1 inch (25 mm) in depth for each 6 inches (152 mm) in height.*

1138A.2.2 Toe space. *Space under an element between the finish floor and 9 inches (229 mm) above the finish floor shall be considered toe space.*

1138A.2.2.1 Minimum width. *Toe space shall be 30 inches (762 mm) wide minimum.*

1138A.2.2.2 Maximum depth. *Toe space shall extend 25 inches (635 mm) maximum under an element.*

1138A.2.2.3 Minimum depth. *When toe space is required under an element as part of a clear floor space, the toe space shall extend 17 inches (432 mm) minimum under the element, measured from the front edge of the element.*

Exceptions:

1. *Combined knee and toe space shall extend 19 inches (483 mm) minimum under sinks required to be accessible.*
2. *Combined knee and toe space shall extend 19 inches (483 mm) minimum under build-in dining and work surfaces required to be accessible.*

1138A.2.2.4 Additional clearance. *Space extending greater than 6 inches (152 mm) beyond the available knee space at 9 inches (229 mm) above the finish floor shall not be considered toe space.*

1138A.3 Reach ranges.

1138A.3.1 Forward reach.

1. ***Unobstructed.*** *When the clear floor space allows only forward approach to an object, the maximum high forward reach allowed shall be 48 inches (1219 mm) and the minimum low forward reach shall be no less than 15 inches (381 mm) above the finish floor. (See Figure 11A-1I(a)).*
2. ***Obstructed high reach.*** *When the high forward reach is over an obstruction, the clear floor space shall extend beneath the element for a distance not less than the reach depth over the obstruction.*

The high forward reach shall be 48 inches (1219 mm) maximum when the reach depth is 20 inches (508 mm) maximum. When the reach depth exceeds 20 inches (508 mm), but is not more than 25 inches (635 mm), the high forward reach shall be 44 inches (1118 mm) maximum. (See Figure 11A-1I(b).)

1138A.3.2 Side reach.

1. ***Unobstructed.*** *When a clear floor space allows a parallel approach to an element, and the side reach is unobstructed, the high side reach shall be 48 inches (1219 mm) maximum, and the low side reach shall be 15 inches (381 mm) minimum above the finish floor. (See Figures 11A-1J(a) and 11A-1J(b).)*

   Exceptions:

   1. *An obstruction shall be permitted between the clear floor space and the element when the depth of the obstruction is 10 inches (254 mm) maximum.*
   2. *Bookshelves shall be permitted to be 54 inches (1372 mm) maximum above the finish floor. Bookshelves may be greater than 54 inches (1372 mm) above the finish floor when an attendant is available to assist persons with disabilities.*

2. ***Obstructed high reach.*** *When a clear floor space allows a parallel approach to an element and the high side reach is over an obstruction, the height of the obstruction shall be 34 inches (864 mm) maximum and the depth of the obstruction shall be 24 inches (610 mm) maximum.*

   The high side reach shall be 48 inches (1219 mm) maximum for a reach depth of 10 inches (254 mm) maximum. When the reach depth exceeds 10 inches (254 mm), but no more than 24 inches (610 mm), the high side reach shall be 46 inches (1168 mm) maximum. (See Figure 11A-1J(c).)

   Exception: *Kitchen countertops in dwelling units, and the top of washing machines and clothes dryers shall be permitted to be 36 inches (914 mm) maximum above the finish floor.*

1138A.4 Controls and operating mechanisms*.*

Note: *See also Section 1142A for receptacle, switch and control installation.*

1138A.4.1 General. *Controls and operating mechanisms in accessible spaces, along accessible routes or as part of accessible elements shall comply with this section.*

1138A.4.2 Clear floor space. *Clear floor space complying with Section 1138A.1.4 that allows a forward or parallel approach by a person using a wheelchair shall be provided at all controls and operating mechanisms.*

1138A.4.3 Height. *Controls and operating mechanisms shall be located no higher than 48 inches (1219 mm), and no lower than 15 inches (381 mm), above the finished floor measured to the center of the grip. If the reach is over an obstruction (for example, washer or dryer), controls and operating mechanisms shall be located within the reach ranges specified in Section 1138A.3. Controls and operating mechanisms that do not satisfy these specifications are acceptable, provided that comparable mechanisms, controls or outlets, that perform the same functions, are provided within the same area and are accessible.*

1138A.4.4 Operation. *Controls and operating mechanisms shall be operable with one hand and shall not require tight grasping, pinching or twisting of the wrist. The force required to activate controls and operating mechanisms shall be no greater than 5 pounds (22.2 N).*

SECTION 1139A —ACCESSIBLE DRINKING FOUNTAINS

1139A.1 General. *Drinking fountains and water coolers in common use areas and/or sites shall comply with this section. A side approach drinking fountain is not acceptable. (See Figure 11A-11A.)*

1139A.2 Accessible route. *Drinking fountains and water coolers shall be on an accessible route.*

1139A.3 Depth. *Drinking fountains shall be a minimum of 18 inches (457 mm) and a maximum of 19 inches (483 mm) in depth.*

1139A.4 Clear floor space. *Drinking fountains shall be provided with 30 inches by 48 inches (762 mm by 1219 mm) clear floor space, centered on the unit. The clear floor space shall be positioned for a forward approach.*

1139A.4.1 Knee and toe space. *Drinking fountains shall be provided with a clear and unobstructed knee and toe space. Knee and toe space shall comply with Section 1138A.2.*

1139A.5 Spout location. *The spout shall be located 15 inches (381 mm) minimum from the vertical support and 5 inches (127 mm) maximum from the front edge of the drinking fountain, including bumpers. Spout outlets shall be 36 inches (914 mm) maximum above the finish floor.*

1139A.6 Water flow. *The spout shall provide a flow of water at least 4 inches (101.6 mm) high to allow the insertion of a cup or glass under the flow of water. The angle of the water stream shall be measured horizontally relative to the front face of the unit. When spouts are located less than 3 inches (76 mm) from the front of the unit, the angle of the water stream shall be 30 degrees maximum. When spouts are located between 3 inches (76 mm) and 5 inches (127 mm) maximum from the front of the unit, the angle of the water stream shall be 15 degrees maximum.*

1139A.7 Controls and operating mechanisms. *The flow of water shall be activated by manually or electronically operated controls. The manually operated controls shall be front mounted or side mounted, located within 6 inches (152 mm) of the front edge of the fountain. The force required to activate controls shall be no greater than 5 pounds (22.2 N).*

1139A.8 Location. *Drinking fountains shall be located completely within alcoves, between wing walls or otherwise positioned so as not to encroach into pedestrian ways. The alcove or otherwise protected area in which the drinking fountain is located shall not be less than 32 inches (813 mm) in width and 18 inches (457 mm) in depth. When the depth of the protected area where the drinking fountain is located exceeds 24 inches (610 mm), additional maneuvering clearance shall be provided in accordance with Section 1138A.1.4.2 and Figure 11A-1H.*

When provided, wing walls shall project out from the supporting wall at least as far as the drinking fountain to within 6 inches (152.4 mm) vertically from the finish floor.

Protruding objects located in alcoves or otherwise positioned so as to limit encroachment into pedestrian ways are permitted to project 4 inches (101.6 mm) into walks, halls, corridors, passageways or aisles. (See Figure 11A-11A.)

SECTION 1140A —ACCESSIBLE TELEPHONES

1140A.1 General. *When public telephones are provided, they shall comply with this section. On floors where public telephones are provided, at least one telephone shall be accessible. On any floor where two or more banks of multiple telephones are provided, at least one telephone in each bank shall be accessible.*

1140A.2 Clear floor or ground space. *A clear floor or ground space at least 30 inches by 48 inches (762 mm by 1219 mm) that allows either a forward or parallel approach by a person using a wheelchair shall be provided at telephones. The clear floor or ground space shall comply with Section 1138A.1.4. Bases, enclosures and fixed seats shall not impede approaches to telephones by people who use wheelchairs. (See Figure 11A-11B.)*

Clear floor or ground space for wheelchairs may be part of the knee space required under some objects.

1140A.3 Relationship of maneuvering clearances to wheelchair spaces. *One full unobstructed side of the clear floor or ground space for a wheelchair shall adjoin another wheelchair clear floor space. If a clear floor space is located in an alcove or otherwise confined on all or part of three sides, additional maneuvering clearances shall be provided. (See Section 1138A.1.4.)*

1140A.4 Mounting height. *The highest operable part of the telephone shall be within the reach ranges specified in Section 1138A.3 (See Figure 11A-11B.)*

1140A.5 Enclosures. *If telephone enclosures are provided, they shall comply with Sections 1140A.5.1 and 1140A.5.2. (See Figure 11A-11B.)*

1140A.5.1 Parallel approach. *Where a parallel approach is provided, the distance from the edge of the telephone enclosure to the face of the telephone unit shall be 10 inches (254 mm) maximum.*

1140A.5.2 Forward approach. *Where a forward approach is provided, the counter may extend beyond the face of the telephone 20 inches (508 mm) maximum into the required clear floor or ground space and the enclosure may extend beyond the face of the telephone 24 inches (610 mm) maximum. If an additional 6 inches (152 mm) in width of clear floor space is provided, creating a clear floor space of 36 inches by 48 inches (914 mm by 1219 mm), the enclosure may extend more than 24 inches (610 mm) beyond the face of the telephone.*

1140A.6 Equipment for hearing impaired people. *Telephones shall be equipped with a receiver that generates a magnetic field in the area of the receiver cap. A reasonable number of the public telephones provided, but always at least one on each floor or in each bank, whichever is more, in a building or facility, shall be equipped with a volume control. Such telephones shall be capable of providing a gain adjustable up to 20 dB minimum. For incremental volume control, at least one intermediate step of 12 dB of gain minimum shall be provided. An automatic reset shall also be provided. Public telephones with volume control shall be hearing aid compatible and shall be identified by a sign containing a depiction of a telephone handset with radiating sound waves. (See Figure 11A-11D.)*

1140A.7 Text telephones (TTY). *If a total of four or more public pay telephones are provided at the interior and exterior of a site, and if at least one of the total number provided is located in an interior location, at least one interior public text telephone shall be provided. TTYs provided at a public pay telephone shall be permanently affixed within, or adjacent to, the telephone enclosure. Where an acoustic coupler is used, the telephone cord shall be sufficiently long to allow connection of the TTY and the telephone receiver.*

1140A.7.1 Signage. *Text telephones shall be identified by the International TTY symbol (see Figure 11A-11C). If a facility has a public text telephone, directional signage indicating the location of the nearest such telephone shall be placed adjacent to all banks of telephones that do not contain a text telephone. Such directional signage shall include the International TTY symbol. If a facility has no banks of telephones, the directional signage shall be provided at the entrance or in a building directory.*

1140A.7.2 Height. *When in use, the touch surface of TTY keypads shall be 34 inches (864 mm) minimum above the finish floor.*

1140A.8 Controls. *Telephones shall have push-button controls where service for such equipment is available. Controls and operating mechanisms shall comply with Section 1138A.4.*

1140A.9 Cord length. *The cord from the telephone to the handset shall be at least 29 inches (737 mm) long.*

1140A.10 Telephone books. *If telephone books are provided, they shall be located in a position that complies with the reach ranges in Section 1138A.3.*

1140A.11 Shelf. *Public pay telephones required to accommodate a portable TTY shall be equipped with a shelf and an electrical outlet within or adjacent to the telephone enclosure. The telephone handset shall be capable of being placed flush on the surface of the shelf. The shelf shall be capable of accommodating a TTY and shall have 6 inches (152 mm) minimum vertical clearance above the area where the TTY is to be placed.*

SECTION 1141A —ACCESSIBLE SWIMMING POOLS

1141A.1 General. *Swimming pools in common use areas shall comply with the provisions of this section and Chapter 31B.*

1141A.2 Swimming pool deck areas. *Swimming pool deck areas must be accessible, and a mechanism to assist persons with disabilities gain entry into the pool and exit from the pool shall be provided. Such a mechanism may consist of a swimming pool lift device as long as the device meets all of the following criteria:*

1. *Has a seat that meets all of the following:*
   - 1.1. *The seat must be rigid;*
   - 1.2. *The seat must be not less than 17 inches (432 mm) and not more than 19 inches (483 mm), inclusive of any cushioned surface that might be provided, above the pool deck;*
   - 1.3. *The seat must have two armrests. The armrest on the side of the seat by which access is gained shall be either removable or fold clear of the seat;*
   - 1.4. *The seat must have a back support that is at least 12 inches (305 mm) tall; and*
   - 1.5. *The seat must have an occupant restraint for use by the occupant of the seat and the restraint must meet the standards for operable controls in compliance with Section 1138A.4.4.*
2. *Be capable of unassisted operation from both the deck and water levels.*
3. *Be stable and not permit unintended movement when a person is getting into or out of the seat.*
4. *Be designed to have a live-load capacity of not less than 300 pounds.*
5. *Be positioned so that, if the pool has water of different depths, it will place the operator into water that is at least 3 feet (914 mm) deep.*
6. *Be capable of lowering the operator at least 18 inches (457 mm) below the surface of the water.*

SECTION 1142A —ELECTRICAL RECEPTACLE, SWITCH AND CONTROL HEIGHTS

1142A.1 Receptacle heights. *Electrical receptacle outlets on branch circuits of 30 amperes or less and communication system receptacles shall be located no more than 48 inches (1219 mm) measured from the top of the receptacle outlet box nor less than 15 inches (381 mm) measured from the bottom of the receptacle outlet box to the level of the finished floor or working platform. If the reach is over a physical barrier or an obstruction (for example, a kitchen base cabinet), receptacles shall be located within the reach ranges specified in Section 1138A.3. Physical barriers and obstructions shall not extend more than 25 inches (635 mm) from the wall beneath the receptacle.*

Receptacle outlets that do not satisfy these specifications are acceptable provided that comparable receptacle outlets, that perform the same functions, are provided within the same area and are accessible.

Exceptions:

1. *Receptacle outlets installed as part of permanently installed baseboard heaters are exempt.*
2. *Required receptacle outlets shall be permitted in floors when adjacent to sliding panels or walls.*
3. *Baseboard electrical outlets used in relocatable partitions, window walls or other electrical convenience floor outlets are not subject to the minimum height requirements.*
4. *This section shall not apply to existing buildings when the enforcing agency determines that compliance with these standards would create an unreasonable hardship.*

1142A.2 Switch and control heights. *Controls or switches intended to be used by the occupant of the room or area to control lighting and receptacle outlets, appliances, alarms or cooling, heating and ventilating equipment shall be located no more than 48 inches (1219 mm) measured from the top of the outlet box nor less than 15 inches (381 mm) measured from the bottom of the outlet box to the level of the finished floor or working platform. If the reach is over a physical barrier or an obstruction (for example, a kitchen base cabinet), switches and controls shall be located within the reach ranges specified in Section 1138A.3. Physical barriers or obstructions shall not extend more than 25 inches (635 mm) from the wall beneath a switch or control.*

Switches and controls that do not satisfy these specifications are acceptable provided that comparable controls or outlets, that perform the same functions, are provided within the same area and are accessible.

SECTION 1143A —SIGNAGE

1143A.1 General. *When signs and/or identification devices are provided they shall comply with this section.*

When both visual and tactile characters are required, either one sign with both visual and tactile characters, or two separate signs—one with visual and one with tactile characters— shall be provided.

Exception: *Signs need not be provided within dwelling units.*

Note: *See Section 1127A.7 for additional signage requirements applicable to sanitary facilities, and Section 1124A for additional signage requirements applicable to elevators.*

1143A.2 Identification signs. *When signs identify permanent rooms and spaces of a building or site, they shall comply with Sections 1143A.1, 1143A.5, 1143A.6 and 1143A.7.*

Exception: *Exterior signs that are not located at the door to the space they serve shall not be required to comply with Section 1143A.6.*

1143A.3 Directional and informational signs. *When signs direct to or give information about permanent rooms and spaces of a building or site, they shall comply with Sections 1143A.5.*

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1143A.4 Accessibility signs. *When signs identify, direct or give information about accessible elements and features of a building or site, they shall include the appropriate symbol of accessibility and shall comply with Section 1143A.5.*

1143A.5 Visual characters. *Signs with visual characters shall comply with this section.*

1. ***Finish and contrast.*** *Characters and their background shall have a non-glare finish. Characters shall contrast with their background, either light on a dark background or dark on a light background.*
2. ***Character type.*** *Characters shall be uppercase, lowercase or a combination of both. Characters shall be conventional in form, and shall not be italic, oblique, script, highly decorative or of other unusual forms.*
3. ***Proportions.*** *Characters on signs shall be selected from fonts where the width of the uppercase letter "O" is 60 percent minimum and 110 percent maximum of the height of the uppercase letter "I".*
4. ***Character height.*** *Visual characters shall be sized in accordance with Table 1143A.5. Viewing distance shall be measured as the horizontal distance between the character and an obstruction preventing further approach towards the sign. Character height shall be based on the uppercase letter "I".*
5. ***Height from finish floor.*** *Visual characters shall be 40 inches (1016 mm) minimum above the finish floor.*

   Exceptions:

   1. *Visual characters indicating elevator car controls.*
   2. *Floor-level exit signs complying with Chapter 10.*
6. ***Stroke thickness.*** *Stroke thickness of the uppercase letter "I" shall be 10 percent minimum and 20 percent maximum of the height of the character.*
7. ***Character spacing.*** *Character spacing shall be measured between the two closest points of adjacent characters, excluding word spaces. Spacing between individual characters shall be 10 percent minimum and 35 percent maximum of character height.*
8. ***Line spacing.*** *Spacing between the baselines of separate lines of characters within a message shall be 135 percent minimum and 170 percent maximum of the character height.*
9. ***Character format.*** *Text shall be in a horizontal format.*

TABLE 1143A.5—VISUAL CHARACTER HEIGHT

HEIGHT TO FINISH FLOOR FROM BASELINE OF CHARACTER	HORIZONTAL VIEWING DISTANCE	MINIMUM CHARACTER HEIGHT
40 inches (1016 mm) to less than or equal to 70 inches (1778 mm)	Less than 72 inches (1829 mm)	$^5/_8$ inch (15.9 mm)
	72 inches (1829 mm) and greater	$^5/_8$ inch (15.9 mm), plus $^1/_8$ inch (3.2 mm) per foot (305 mm) of viewing distance above 72 inches (1829 mm)
Greater than 70 inches (1778 mm) to less than or equal to 120 inches (3048 mm)	Less than 180 inches (4572 mm)	2 inches (51 mm)
	180 inches (4572 mm) and greater	2 inches (51 mm), plus $^1/_8$ inch (3.2 mm) per foot (305 mm) of viewing distance above 180 inches (4572 mm)
Greater than 120 inches (3048 mm)	Less than 21 feet (6401 mm)	3 inches (76 mm)
	21 feet (6401 mm) and greater	3 inches (76 mm), plus $^1/_8$ inch (3.2 mm) per foot (305 mm) of viewing distance above 21 feet (6401 mm)

1143A.6 Raised characters and pictorial symbol signs. *When raised characters are required or when pictorial symbols (pictograms) are used on such signs, they shall comply with this section. Raised characters and pictorial symbols shall be duplicated in Braille complying with Section 1143A.7.*

1. ***Character type.*** *Raised characters on signs shall be $^1/_{32}$ inch (0.8 mm) minimum above their background. Characters shall be sans serif uppercase, and shall not be italic, oblique, script, highly decorative or of other unusual forms.*
2. ***Character height.*** *Character height measured vertically from the baseline of the character shall be $^5/_8$ inch (15.9 mm) minimum and 2 inches (51 mm) maximum based on the height of the uppercase letter "I".*
3. ***Character format.*** *Characters and Braille shall be in a horizontal format.*
4. ***Proportions.*** *Raised characters on signs shall be selected from fonts when the width of the uppercase letter "O" is 60 percent minimum and 110 percent maximum of the height of the uppercase letter "I".*
5. ***Stroke thickness.*** *Stroke thickness of the uppercase letter "I" shall be 15 percent maximum of the height of the character.*
6. ***Character spacing.*** *Character spacing shall be measured between the two closest points of adjacent raised characters within a message, excluding word spaces. When characters have rectangular cross sections, spacing between individual raised characters shall be $^1/_8$ inch (3.2 mm) minimum and 4 times the raised character stroke width maximum. When characters have other cross sections, spacing between individual raised characters shall be $^1/_{16}$ inch (1.6 mm) minimum and 4 times the raised character stroke width maximum at the base of the cross sections, and $^1/_8$ inch (3.2 mm) minimum and 4 times the raised character stroke width maximum at the top of the cross sections. Characters shall be separated from raised borders and decorative elements $^3/_8$ inch (9.5 mm) minimum.*

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7. ***Line spacing.*** *Spacing between the baselines of separate lines of raised characters within a message shall be 135 percent minimum and 170 percent maximum of the raised character height.*
8. ***Location.*** *When a tactile sign is provided at a door, the sign shall be located alongside the door at the latch side. When a tactile sign is provided at double doors with one active leaf, the sign shall be located on the inactive leaf. When a tactile sign is provided at double doors with two active leafs, the sign shall be located to the right of the right hand door. When there is no wall space at the latch side of a single door or at the right side of double doors, signs shall be located on the nearest adjacent wall. Signs containing tactile characters shall be located so that a clear floor space of 18 inches (457 mm) minimum by 18 inches (457 mm) minimum, centered on the tactile characters, is provided beyond the arc of any door swing between the closed position and 45 degree open position. When permanent identification signage is provided for rooms and spaces they shall be located on the approach side of the door as one enters the room or space. Signs that identify exits shall be located on the approach side of the door as one exits the room or space.*
9. ***Height.*** *Signs with raised characters shall be located 48 inches (1219 mm) minimum above the finish floor, measured from the baseline of the lowest Braille cells and 60 inches (1524 mm) maximum above the finish floor, measured from the baseline of the highest line of raised characters.*

   Exception: *Tactile characters for elevator car controls shall not be required to comply with this section.*
10. ***Pictorial symbol signs (pictograms).*** *Pictorial symbol signs (pictograms) shall be accompanied by a text description located directly below the pictogram field. The text description shall comply with Sections 1143A.6 and 1143A.7. The outside dimension of the pictogram field shall be a minimum of 6 inches (152 mm) in height. Characters and Braille shall not be located in the pictogram field.*

1143A.7 Braille. *Contracted Grade 2 Braille shall be used wherever Braille is required in other portions of these standards.*

1143A.7.1 Dimensions and capitalization. *Braille dots shall have a domed or rounded shape and shall comply with Table 1143A.7.1. The indication of an uppercase letter or letters shall only be used before the first word of sentences, proper nouns and names, individual letters of the alphabet, initials and acronyms.*

1143A.7.2 Position. *Braille shall be positioned below the corresponding text in a horizontal format, flush left or centered. If text is multilined, braille shall be placed below the entire text. Braille shall be separated $^{3}/_{8}$ inch (9.5 mm) minimum and $^{1}/_{2}$ inch (12.7 mm) maximum from any other tactile characters and $^{3}/_{8}$ inch (9.5 mm) minimum from raised borders and decorative elements.*

Exception: *Braille provided on elevator car controls shall be separated $^{3}/_{16}$ inch (4.8 mm) minimum and shall be located directly below the corresponding raised characters or symbols.*

TABLE 1143A.7.1—BRAILLE DIMENSIONS

MEASUREMENT RANGE	***MINIMUM IN INCHES MAXIMUM IN INCHES***
Dot base diameter	*0.059 (1.5 mm) to 0.063 (1.6 mm)*
Distance between two dots in the same cell[1]	*0.100 (2.5 mm)*
Distance between corresponding dots in adjacent cells[1]	*0.300 (7.6 mm)*
Dot height	*0.025 (0.6 mm) to 0.037 (0.9 mm)*
Distance between corresponding dots from one cell directly below[1]	*0.395 (10 mm) to 0.400 (10.2 mm)*

1. *Measured center to center.*

1143A.8 Symbols of accessibility. *Symbols of accessibility and their background shall have a non-glare finish. Symbols of accessibility shall contrast with their background with either a light symbol on a dark background or a dark symbol on a light background. Symbols of accessibility shall comply with the following:*

1. ***International Symbol of Accessibility.*** *The "International Symbol of Accessibility" shall consist of a white figure on a blue background.* The color blue shall approximate FS 15090 in Federal Standard 595C. *(See Figure 11A-1A.)*
2. ***International Symbol of TTY.*** *(See Figure 11A-11C.)*
3. ***Volume Control Telephones.*** *(See Figure 11A-11D.)*
4. ***Assistive Listening Systems.*** *(See Figure 11A-11E.)*
5. ***Cleaner Air Symbol.*** *(See Chapter 11B.)*
6. ***Toilet and Bathing Facilities Geometric Symbols. (****See Section 1127A.7.)*

SECTION 1144A —RESERVED

SECTION 1145A —RESERVED

SECTION 1146A —RESERVED

SECTION 1147A —RESERVED

SECTION 1148A —RESERVED

SECTION 1149A —RESERVED

DIVISION VI – SITE IMPRACTICALITY TESTS

DIVISION VI Table of Contents

Section 1150A Site Impracticality Tests

Test No. 1—Individual Building Test

Test No. 2—Site Analysis Test

Test No. 3—Unusual Characteristics Test

SECTION 1150A —SITE IMPRACTICALITY TESTS

1150A.1 General. *Covered multifamily dwellings in buildings without an elevator, located on sites with difficult terrain conditions or unusual characteristics, may employ the site impracticality tests in this division for determining the accessibility and adaptability provisions required by this chapter.*

Except as provided for in Section 1102A.3.1, the provisions of this section do not apply to multistory dwelling units in nonelevator buildings.

SINGLE BUILDING WITH ONE COMMON (LOBBY) ENTRANCE

The following may only be used for determining required access to covered multifamily dwelling units, in a single building with one common (lobby) entrance, located on a site with difficult terrain conditions or unusual characteristics:

All ground floor units in nonelevator buildings shall be adaptable and on an accessible route unless an accessible route to the common (lobby) entrance is not required as determined by Test No. 1, Individual Building Test, or Test No. 3, Unusual Characteristics Test, as described in this section.

Sites where either Test No. 1 or Test No. 3 is used and it is determined that an accessible route to the common (lobby) entrance is not required, at least 20 percent of the ground floor dwelling units shall comply with Division IV, and all remaining ground floor dwelling units shall comply with the features listed in Section 1150A.2 unless exempted by Test No. 3, Unusual Characteristics Test.

Test No. 1—Individual Building Test may only be used if the site has terrain over 15 percent slope.

Test No. 3 —Unusual Characteristics Test may be used if applicable.

Provisions to Test Nos. 1 and 2. *Where a building elevator is provided only as means of creating an accessible route to covered multifamily dwelling units on a ground floor, the building is not considered to be an elevator building for purposes of this code; hence, only the ground floor dwelling units would be covered.*

TEST NO. 1—INDIVIDUAL BUILDING TEST

It is not required by this code to provide an accessible route when the terrain of the site is such that both of the following apply:

1. *The slopes of the undisturbed site measured between the planned entrance and all vehicular or pedestrian arrival points within 50 feet (15 240 mm) of the planned entrance exceed 15 percent; and*
2. *The slopes of the planned finished grade measured between the entrance and all vehicular or pedestrian arrival points within 50 feet (15 240 mm) of the planned entrance also exceed 15 percent.*

If there are no vehicular or pedestrian arrival points within 50 feet (15 240 mm) of the planned entrance, the slope for the purposes of Test No. 1 will be measured to the closest vehicular or pedestrian arrival point.

For purposes of these requirements, vehicular or pedestrian arrival points include public or resident parking areas, public transportation stops, passenger loading zones and public streets or sidewalks. To determine site impracticality, the slope would be measured at ground level from the point of the planned entrance on a straight line to (1) each vehicular or pedestrian arrival point that is within 50 feet (15 240 mm) of the planned entrance, or (2) if there are no vehicular or pedestrian arrival points within the specified area, the vehicular or pedestrian arrival point closest to the planned entrance. In the case of sidewalks, the closest point to the entrance will be where a public sidewalk entering the site intersects with the walk to the entrance. In the case of resident parking areas, the closest point to the planned entrance will be measured from the entry point to the parking area that is located closest to the planned entrance.

TEST NO. 2—SITE ANALYSIS TEST

For a site having multiple buildings, or a site with a single building with multiple entrances, it is not required to provide an accessible route to all ground floor units under the following conditions:

1. *Calculate the percentage of the total buildable area of the undisturbed site with a natural grade less than 10-percent slope. The analysis of the existing slope (before grading) shall be done on a topographic survey with 2-foot (610 mm) contour intervals*

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with slope determination made between each successive interval. The accuracy of the slope analysis shall be certified by a licensed engineer, landscape architect, architect or surveyor.

2. *Determine the requirement of providing an accessible route to planned multifamily dwellings based on the topography of the existing natural terrain. The minimum percentage of ground floor units required on an accessible route shall equal the percentage of the total buildable area (not restricted-use areas) of the undisturbed site with an existing natural grade of less than 10-percent slope. In no case shall less than 20 percent of the ground floor dwelling units be on an accessible route and comply with the provisions of Division IV.*
3. *In addition to the percentage established in paragraph (2), all additional ground floor units in a building or ground floor units served by a particular entrance, that fall within an 8.33-percent slope between their planned entrances and an arrival point shall be on an accessible route and comply with the provisions of Division IV.*
4. *All additional ground floor units in a building, or ground floor units served by a particular entrance, not on an accessible route shall comply with the features listed in Section 1150A.2.*

TEST NO. 3—UNUSUAL CHARACTERISTICS TEST

Unusual characteristics include sites located in a state or federally designated floodplain or coastal high-hazard areas and sites subject to other similar requirements of law or code that require the lowest floor or the lowest structural member of the lowest floor to be designed to a specified level at or above the base flood elevation. An accessible route to a building entrance is impractical due to unusual characteristics of the site when:

1. *The original site characteristics result in a difference in finished grade elevation exceeding 30 inches (762 mm) and 10 percent measured between an entrance and all vehicular or pedestrian arrival points within 50 feet (15 240 mm) of the planned entrance; or*
2. *If there are no vehicular or pedestrian arrival points within 50 feet (15 240 mm) of the planned entrance, the unusual characteristics result in a difference in finished grade elevation exceeding 30 inches (762 mm) and 10 percent measured between an entrance and the closest vehicular or pedestrian arrival point.*

1150A.2 Additional requirements for Section 1150A.

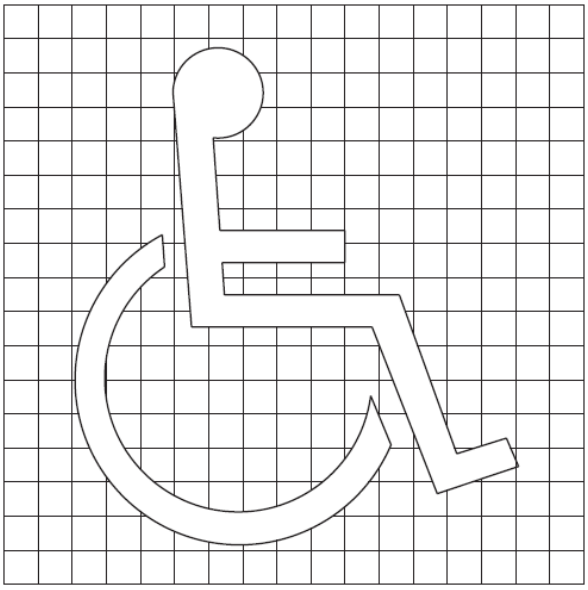
All other ground floor dwelling units in nonelevator buildings shall be made to comply with the following requirements:

1. *Grab bar reinforcement: see Section 1134A.*
2. *Thirty-two inch (813 mm) clear door interior opening width: see Section 1132A.3.*
3. *Lever hardware: see Section 1132A.8.*
4. *Door signal devices: see Section 1132A.10.*
5. *Clear space by doors: see Chapters 10 and 11A.*
6. *Minimum 15-inch (381 mm) water closet seat height: see Section 1134A.7, Item 3.*
7. *Electrical receptacle outlet height: see Section 1136A.*
8. *Lighting and environmental control height: see Section 1136A.*
9. *Faucet controls: see Section 1134A.8, Item 7.*
10. *Water closet, bathtub and lavatory minimum space requirements: see Section 1134A.*
11. *Removable cabinets under the kitchen sink counter area: see Section 1133A.3.*

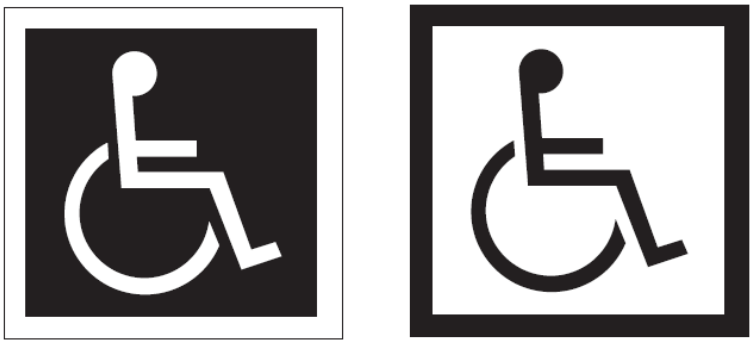
Division VII – FIGURES

Diagrams illustrate the specific requirements of these regulations and are intended only as an aid for building design and construction. Diagrams are not to scale.

FIGURE 11A-1A—INTERNATIONAL ACCESSIBILITY SYMBOL



(a) SYMBOL PROPORTIONS



(b) DISPLAY CONDITIONS

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FIGURE 11A-1B—HEADROOM CLEARANCE AND OVERHANGING OBSTRUCTION

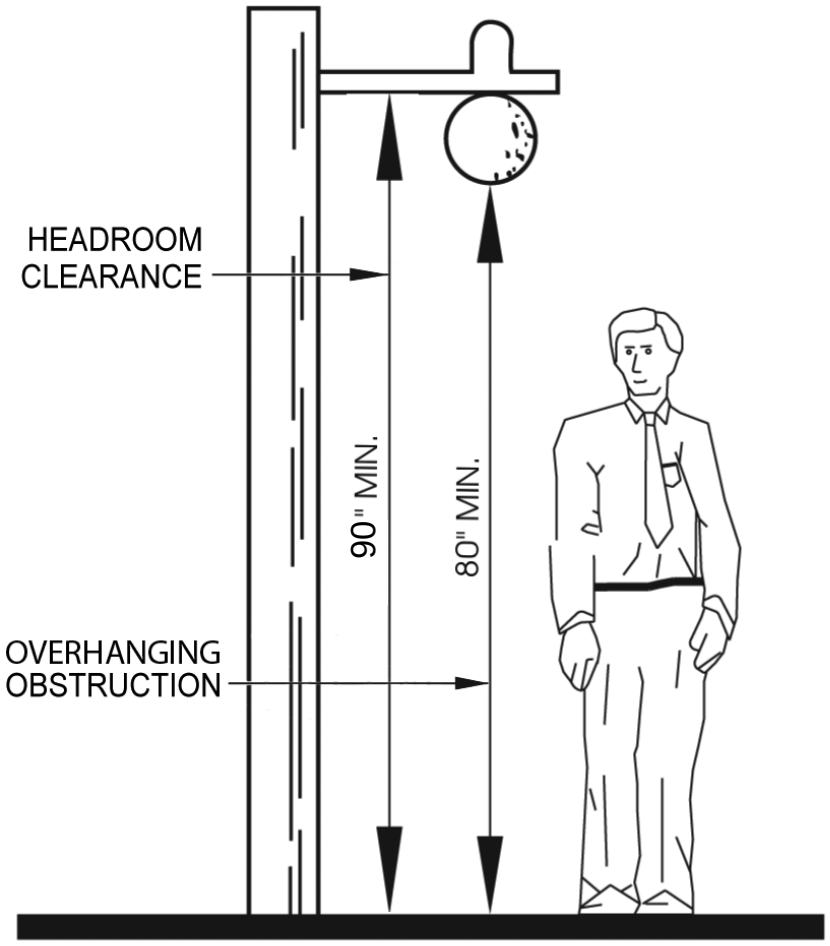
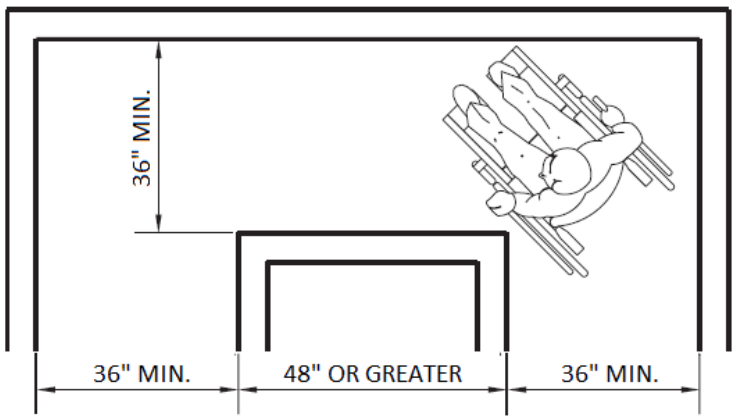
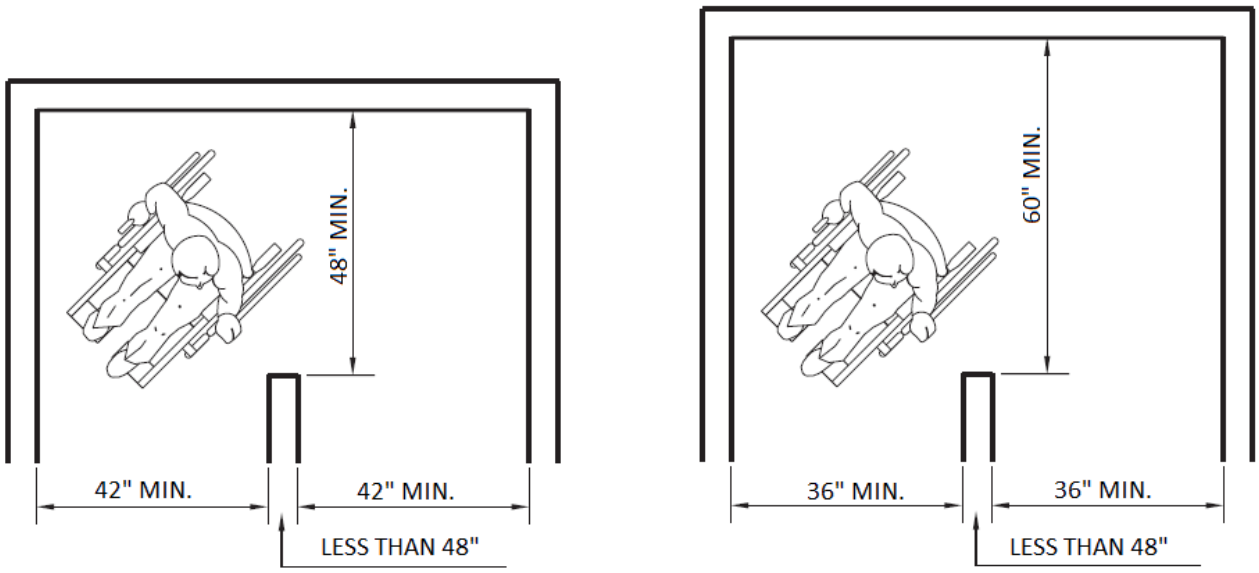


FIGURE 11A-1C—WIDTH OF ACCESSIBLE ROUTE AT TURNS

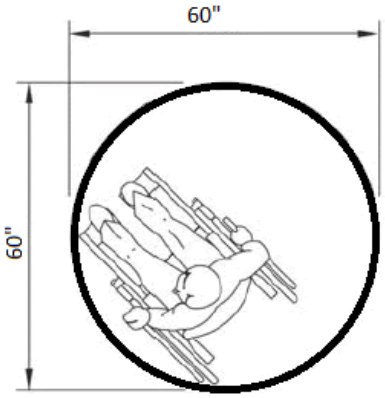


(a) 90° TURN AROUND OBSTRUCTION

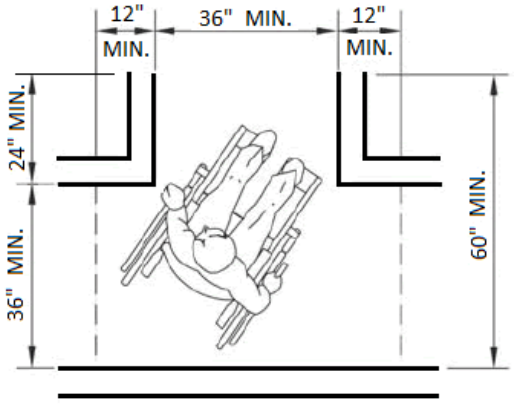


(b) 180° TURN AROUND OBSTRUCTION

FIGURE 11A-1D—WHEELCHAIR TURNING SPACE

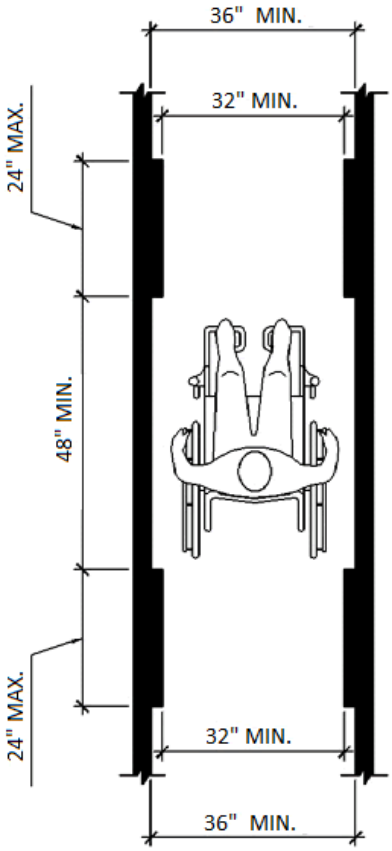


(a) 60 INCHES DIAMETER SPACE

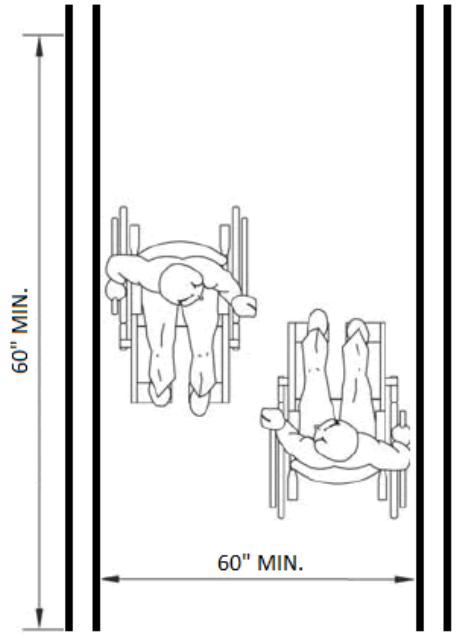


(b) T-SHAPED SPACE FOR 180 º TURN

FIGURE 11A-1E—WHEELCHAIR PASSAGE WIDTH

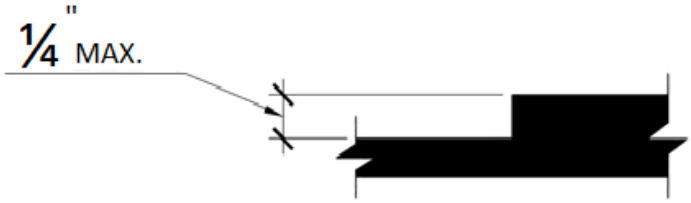


MINIMUM CLEAR WIDTH FOR SINGLE WHEELCHAIR

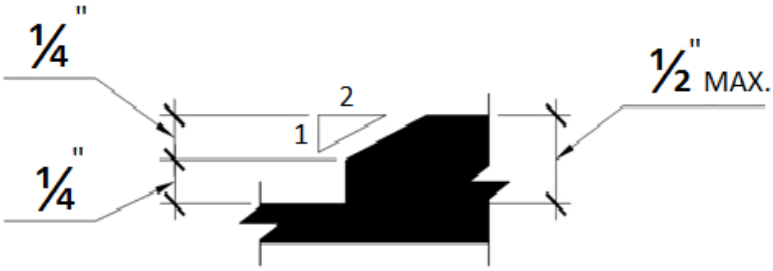


MINIMUM CLEAR WIDTH FOR TWO WHEELCHAIRS

FIGURE 11A-1F—CHANGE IN LEVEL



(a) VERTICAL CHANGE IN LEVEL



(b) BEVELED CHANGE IN LEVEL

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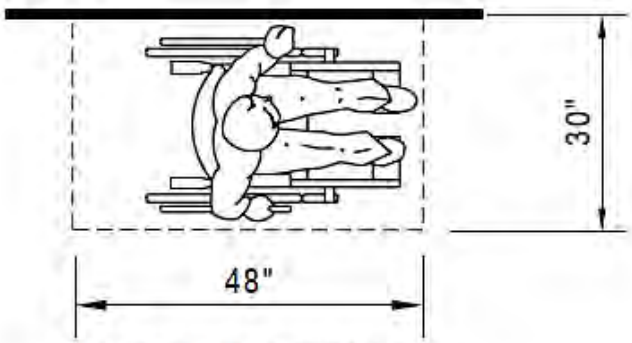
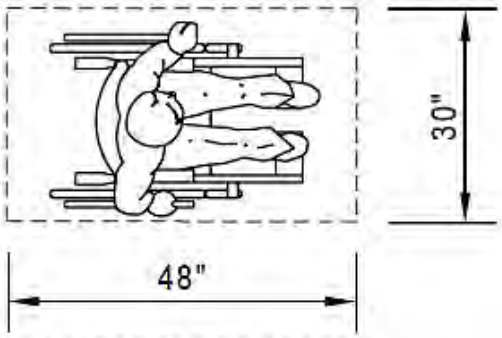
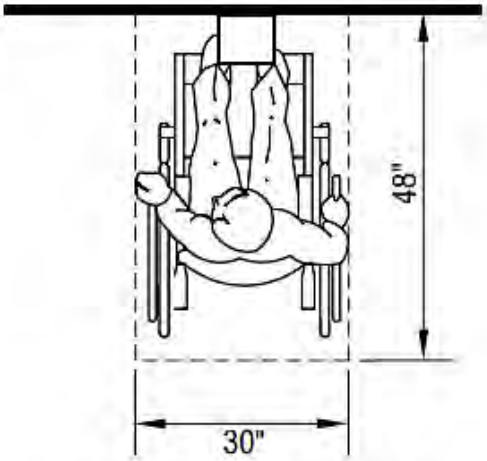
FIGURE 11A-1G—MINIMUM CLEAR FLOOR SPACE FOR WHEELCHAIRS



(a) PARALLEL APPROACH

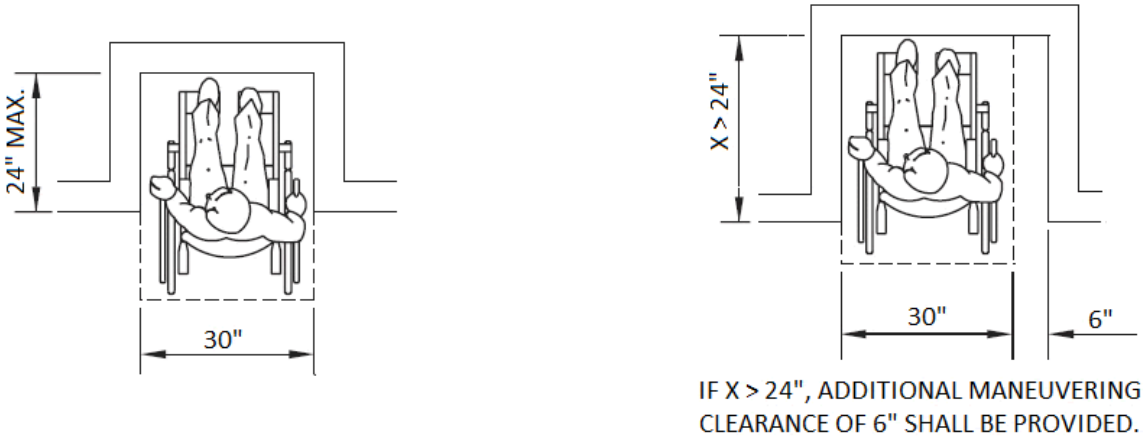


(b) CLEAR FLOOR SPACE

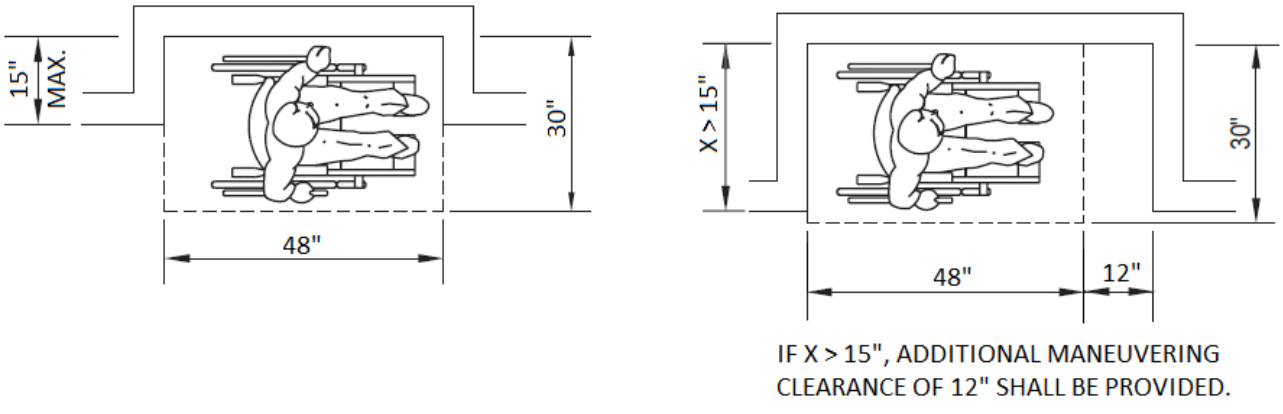


(c) FORWARD APPROACH

FIGURE 11A-1H—MINIMUM CLEAR FLOOR SPACE IN ALCOVES

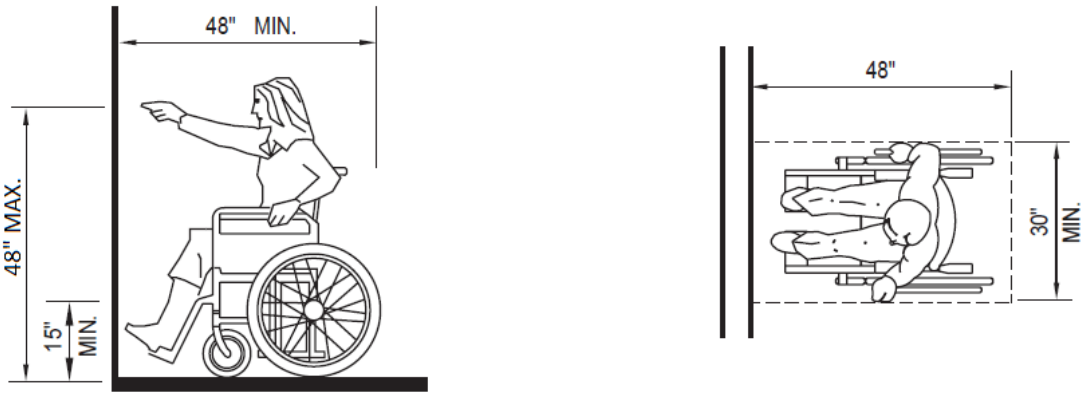


(a) FORWARD APPROACH

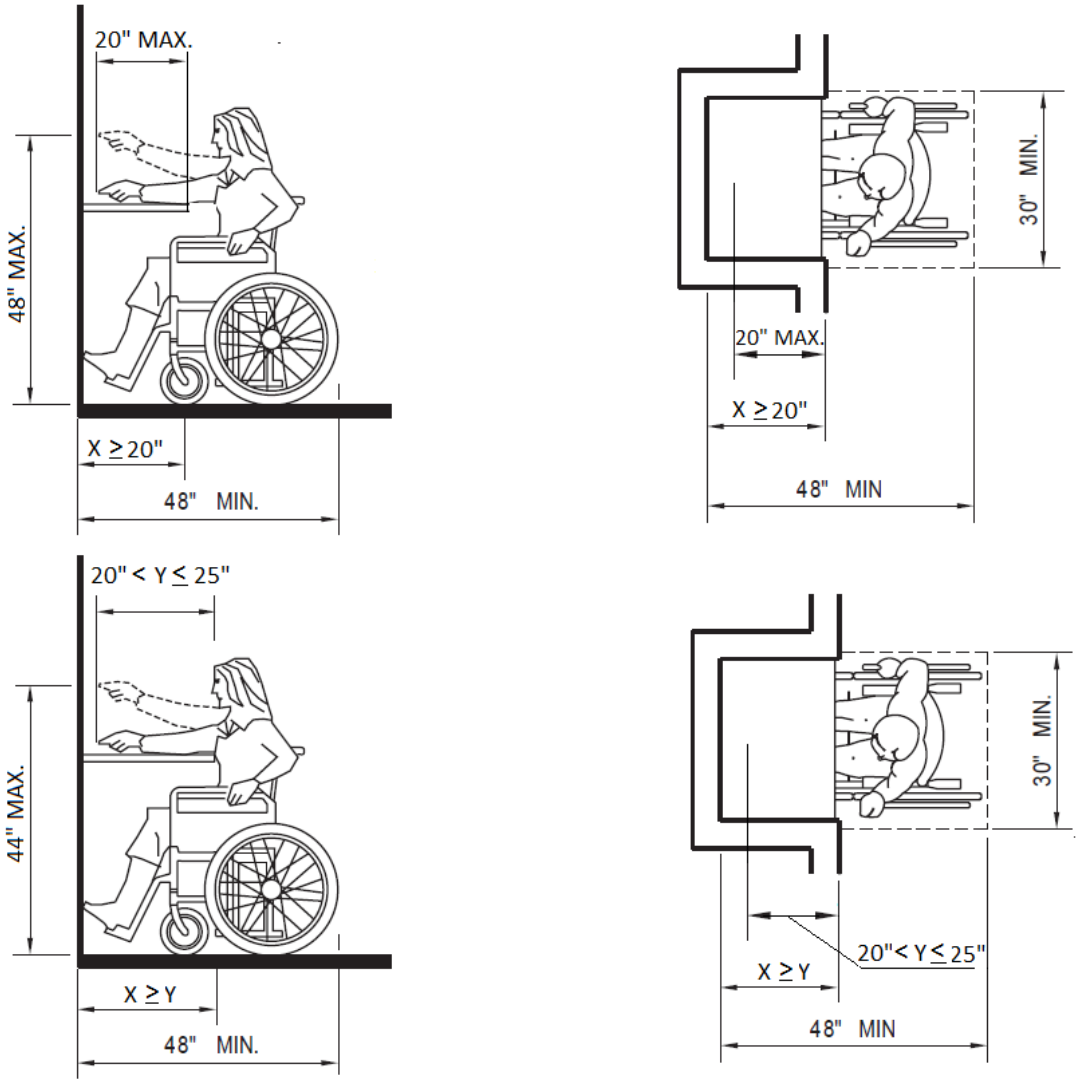


(b) PARALLEL APPROACH

FIGURE 11A-1I—FORWARD REACH



(a) UNOBSTRUCTED FORWARD REACH



(b) FORWARD REACH OVER OBSTRUCTION

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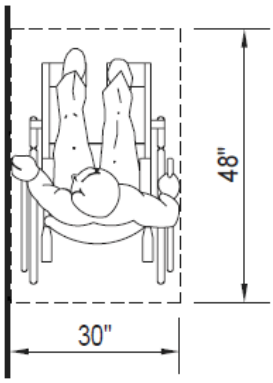
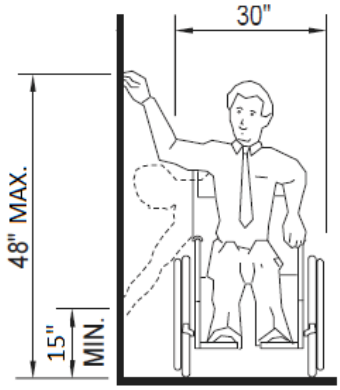
FIGURE 11A-1J—SIDE REACH

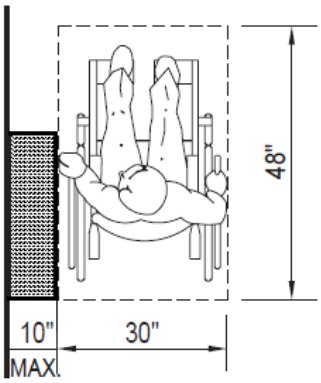


CLEAR FLOOR SPACE FOR PARALLEL APPROACH

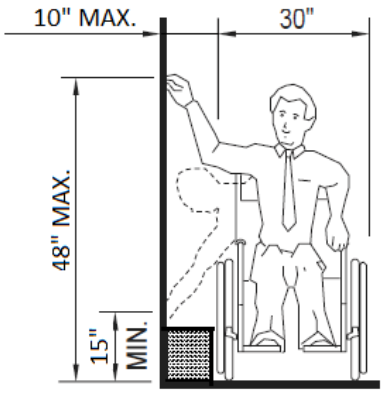


HIGH AND LOW SIDE REACH LIMITS

(a) UNOBSTRUCTED SIDE REACH

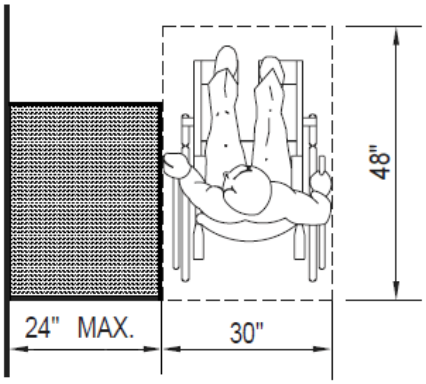


CLEAR FLOOR SPACE FOR PARALLEL APPROACH

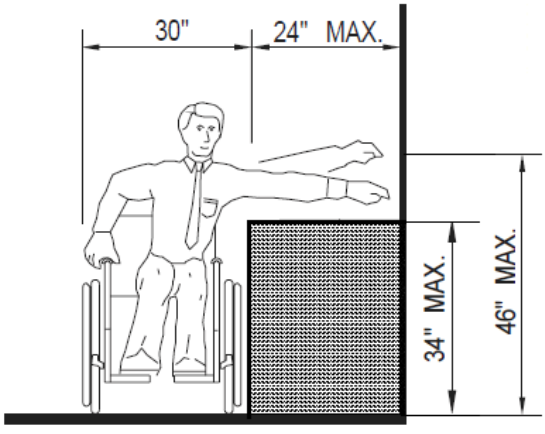


HIGH AND LOW SIDE REACH LIMITS

(b) SIDE REACH OVER OBSTRUCTION 10" MAXIMUM



CLEAR FLOOR SPACE FOR PARALLEL APPROACH



MAXIMUM SIDE REACH OVER OBSTRUCTION

(c) SIDE REACH OVER OBSTRUCTION > 10" AND 24" MAXIMUM

FIGURE 11A-1K—MINIMUM CLEARANCES FOR SEATING AND TABLE

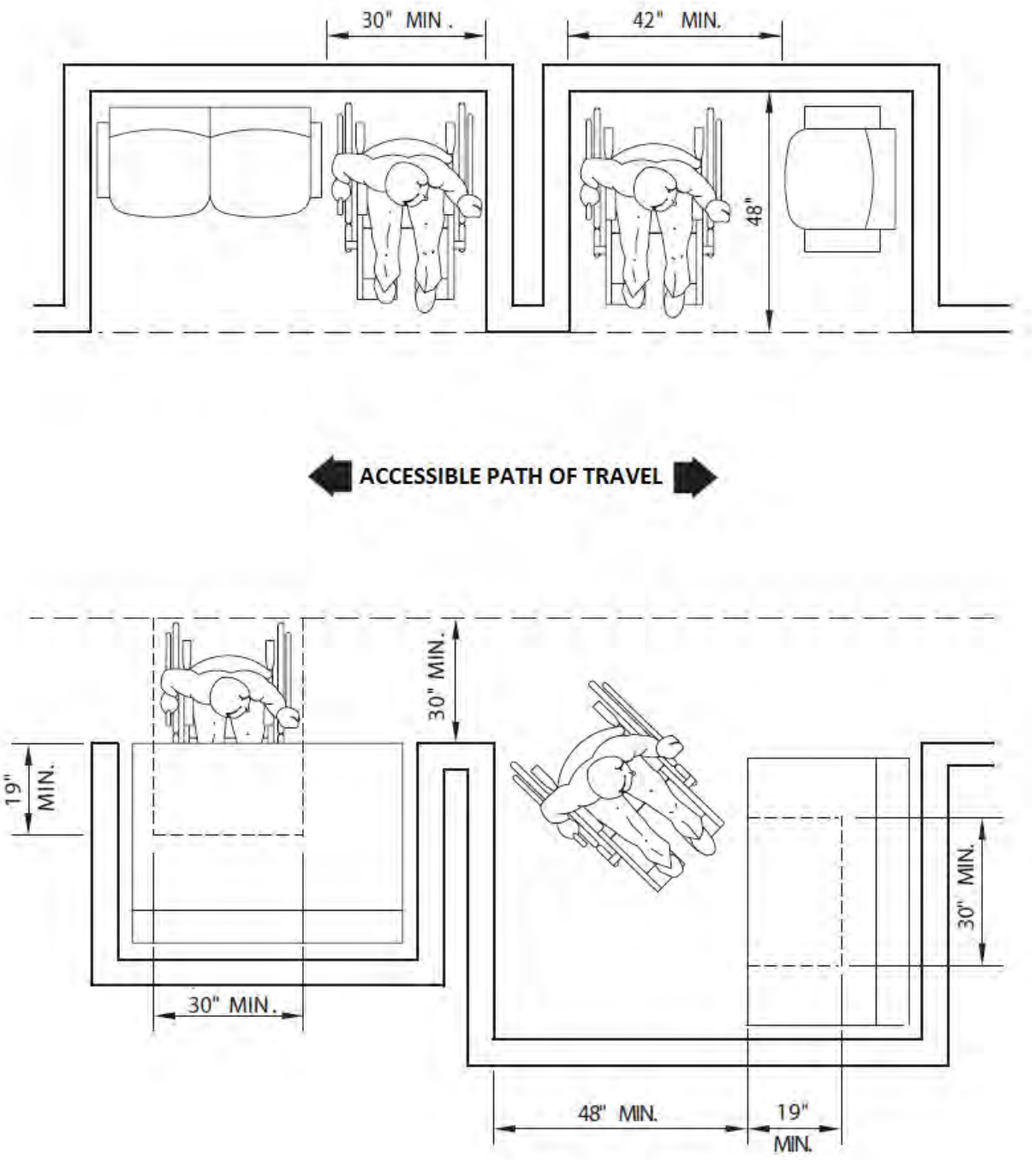
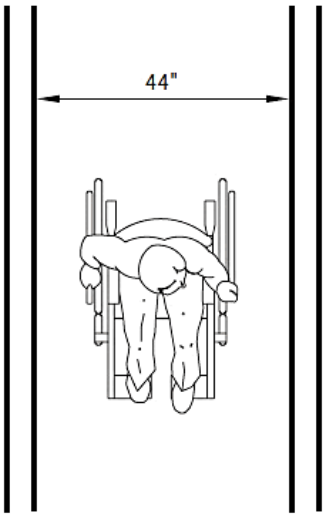
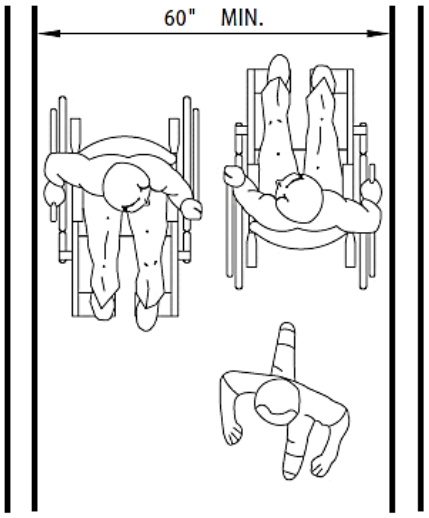


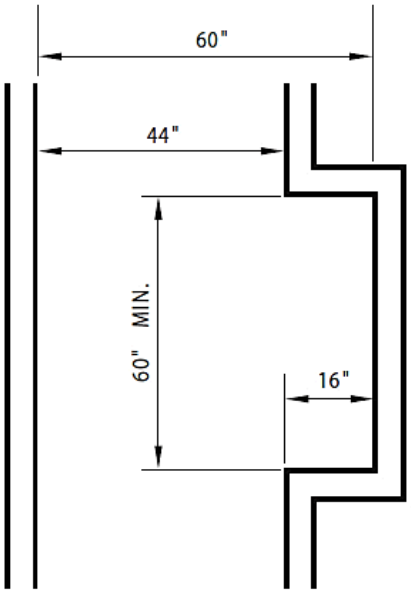
FIGURE 11A-1L—INTERIOR ACCESSIBLE ROUTE (CORRIDOR) OVER 200 FEET; OCCUPANT LOAD 10 OR MORE

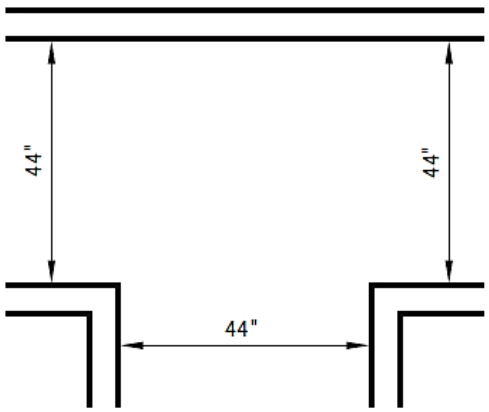


(a) MINIMUM WIDTH FOR CORRIDORS



(b) MINIMUM WIDTH FOR CORRIDORS OVER 200 FEET





(c) PASSING METHODS FOR CORRIDORS WITH LENGTH OVER 200 FEET AND WIDTH LESS THAN 60"

FIGURE 11A-2A—DOUBLE PARKING STALLS

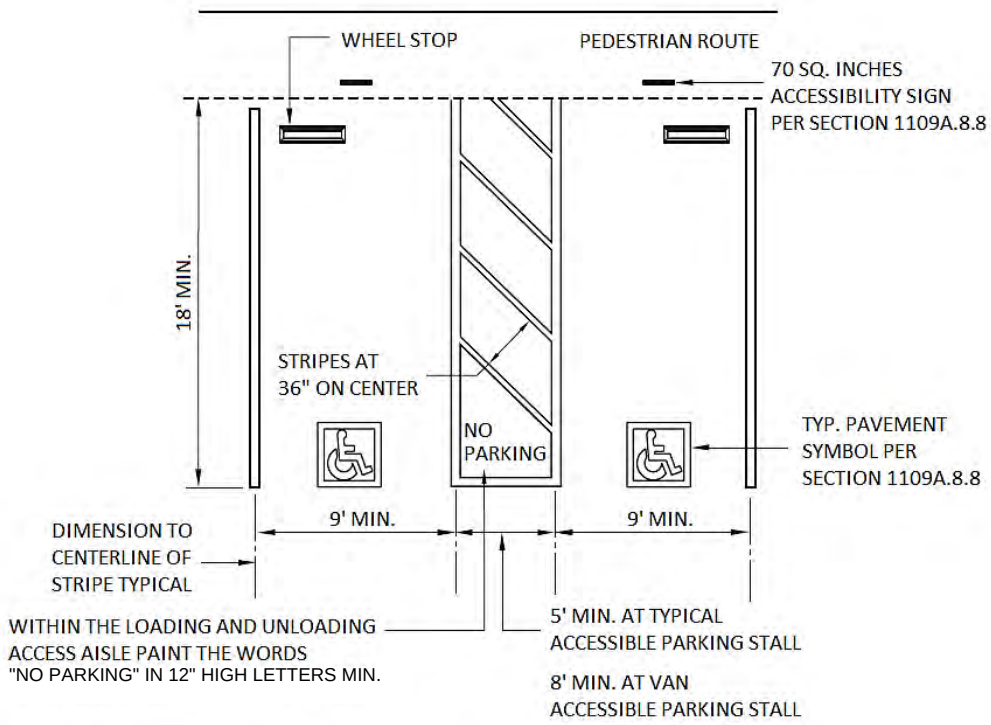


FIGURE 11A-2B—SINGLE AND VAN ACCESSIBLE PARKING STALLS

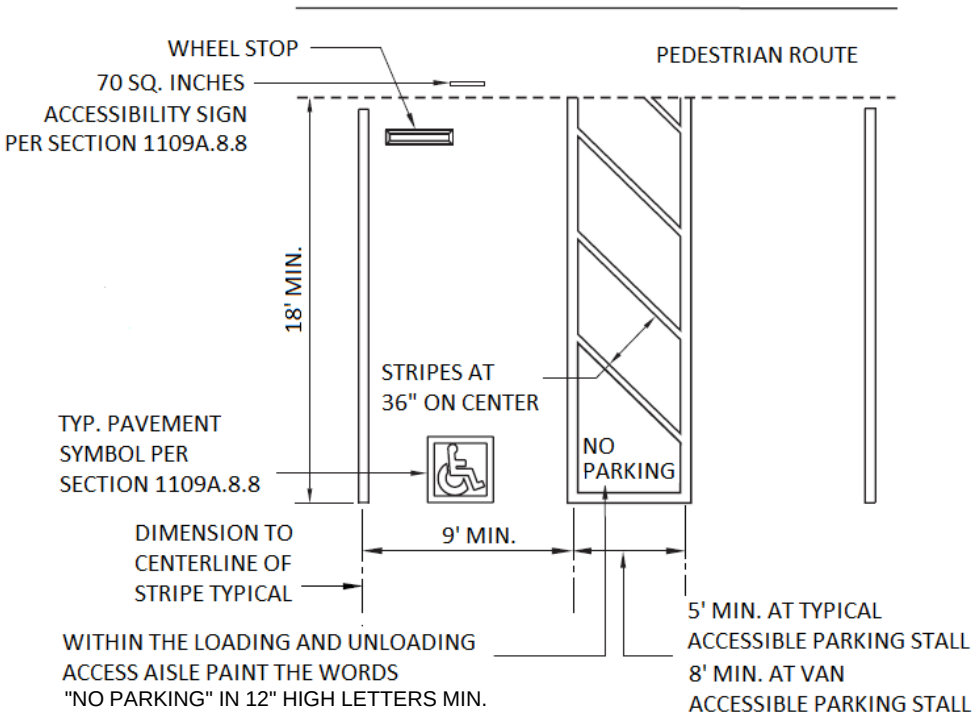


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FIGURE 11A-2C—DIAGONAL PARKING STALLS

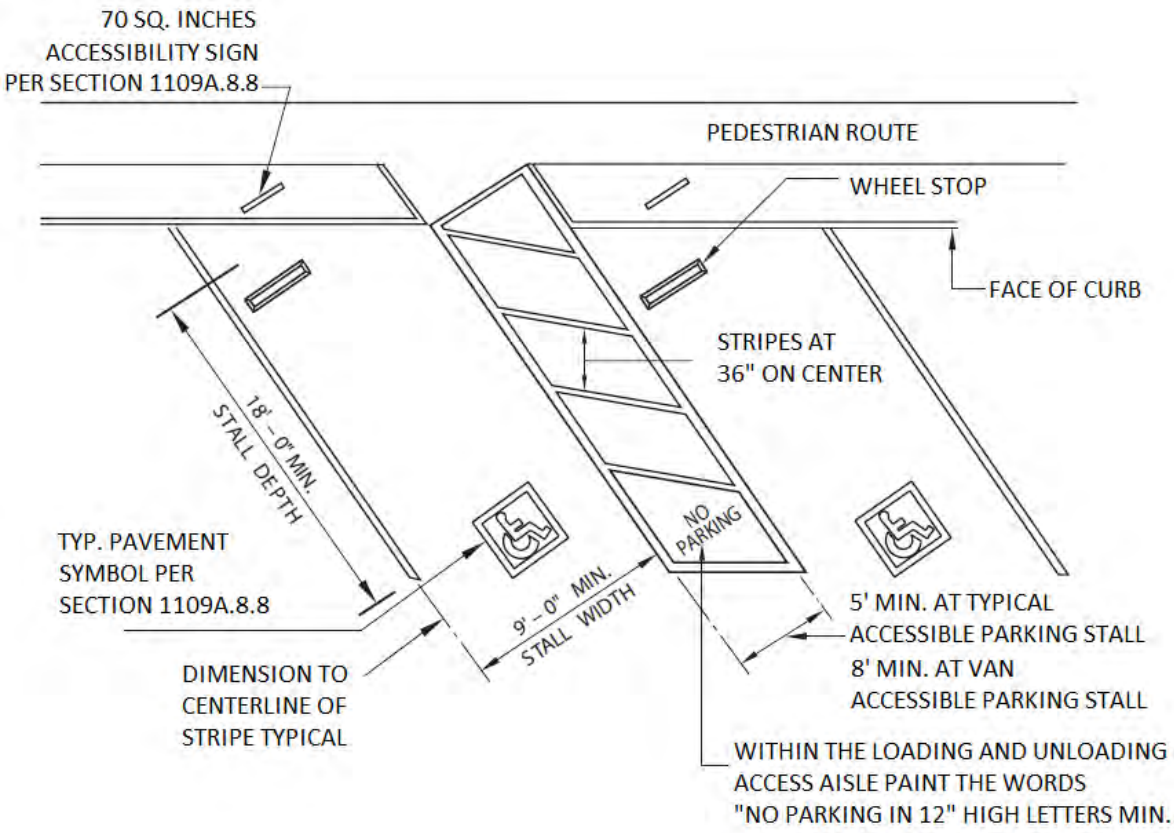
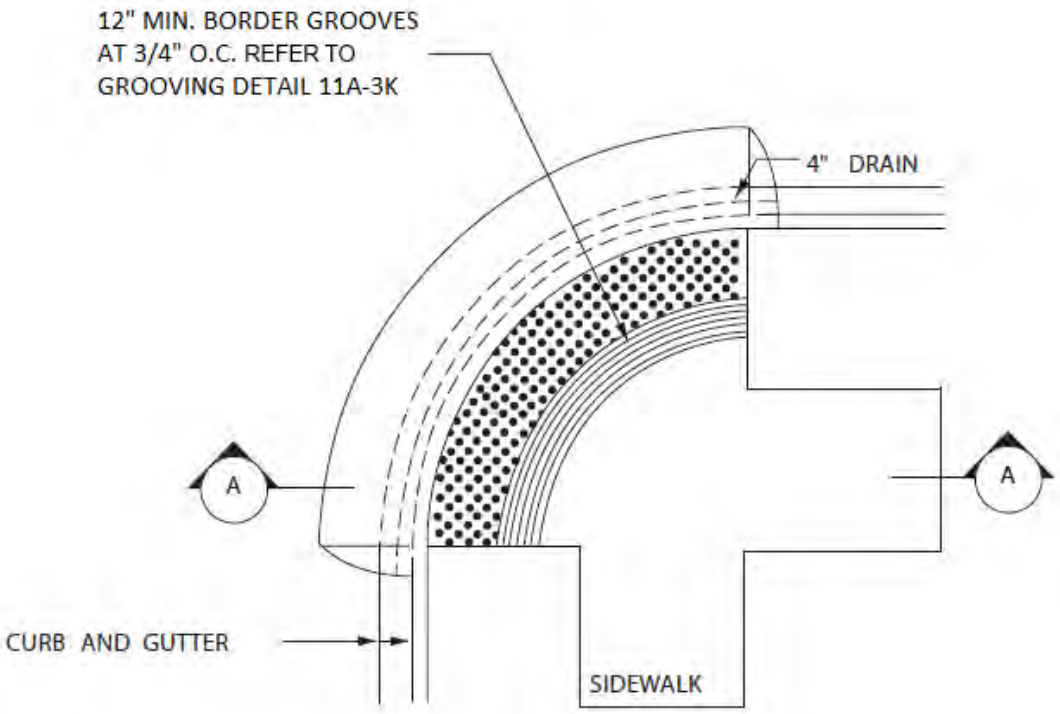
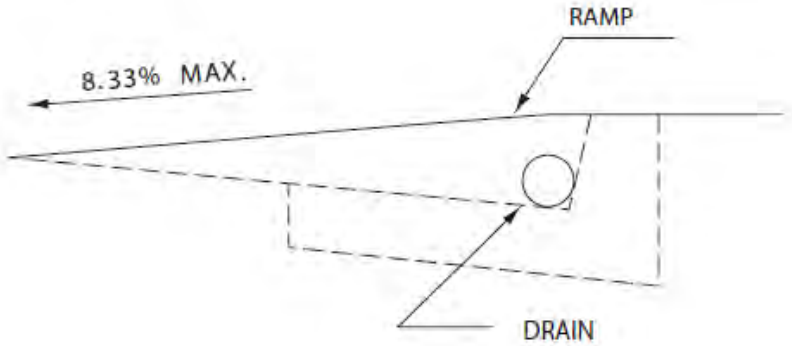


FIGURE 11A-3A—CURB DETAILS





SECTION A-A

FIGURE 11A-3B—CURB DETAIL

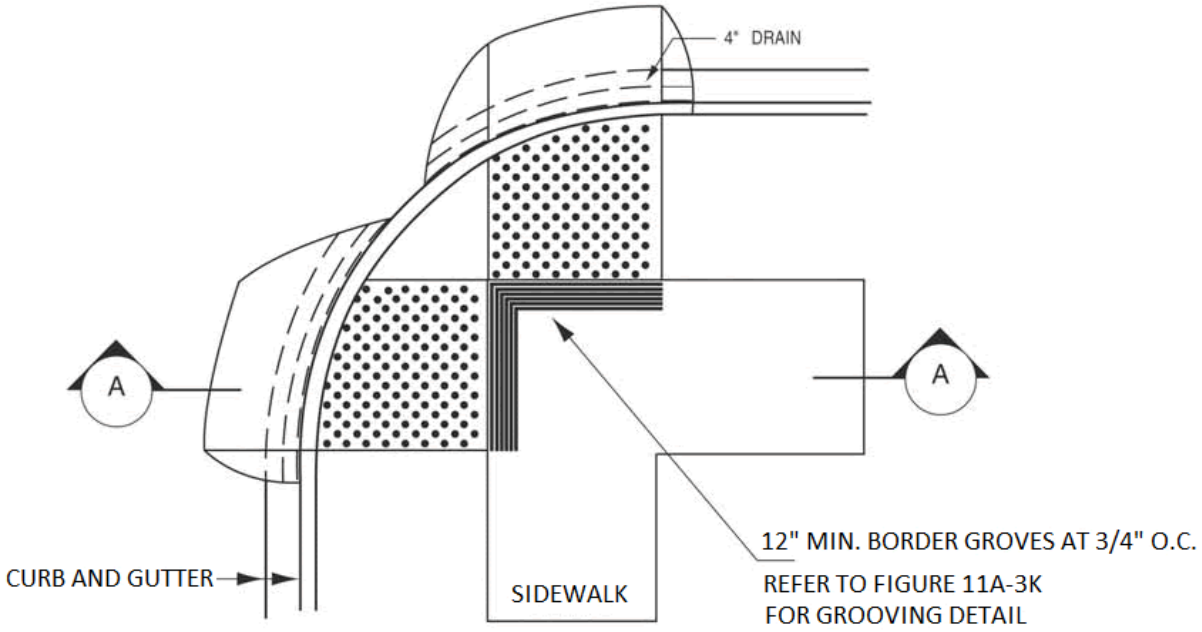
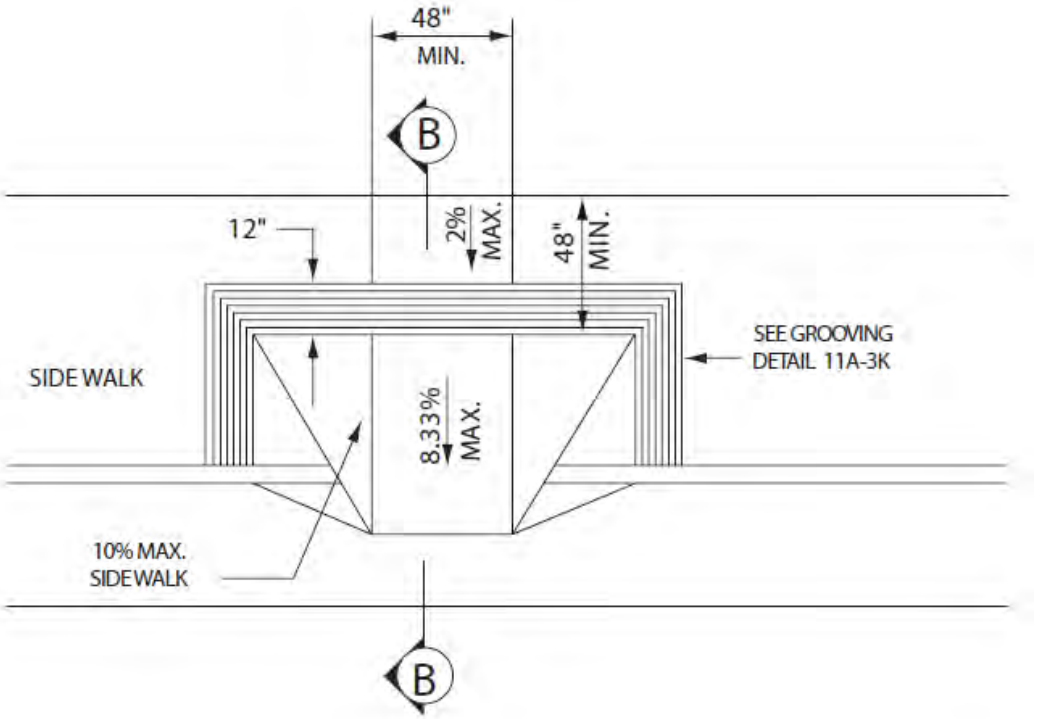
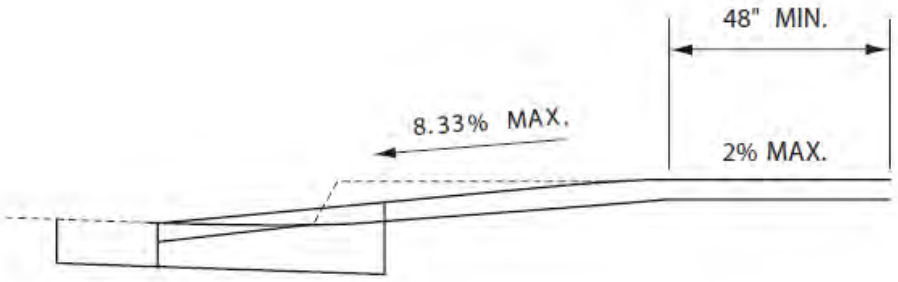


FIGURE 11A-3C—CURB DETAIL





SECTION B-B

FIGURE 11A-3D—CURB DETAIL

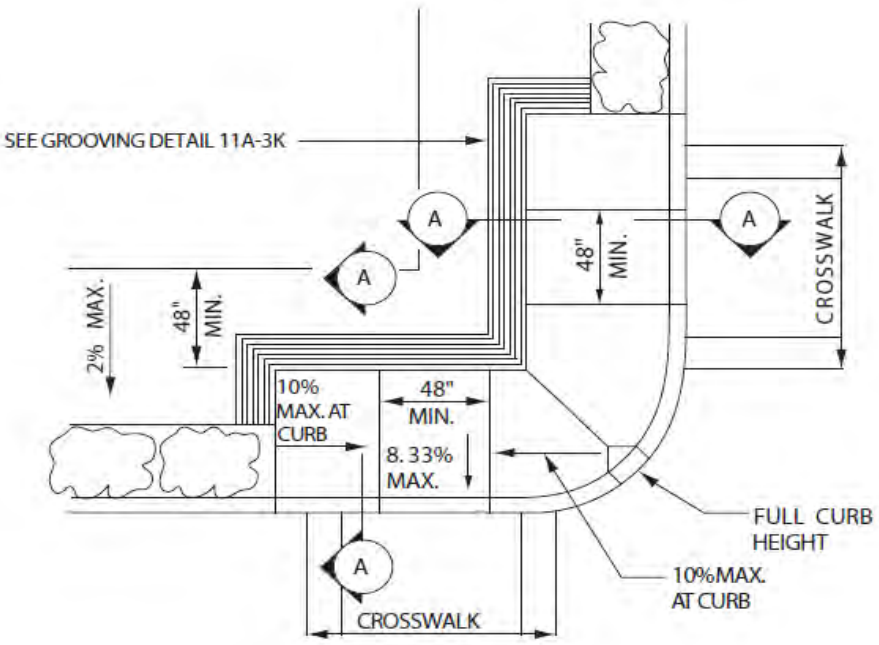


FIGURE 11A-3E—CURB DETAIL

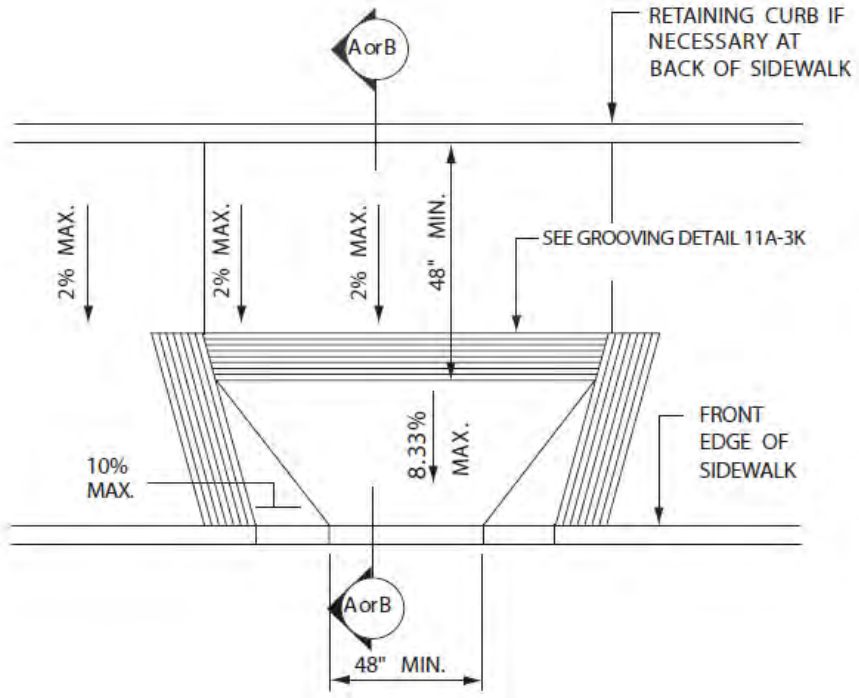


FIGURE 11A-3F—CURB DETAIL - SIDEWALK LESS THAN 60″ WIDE

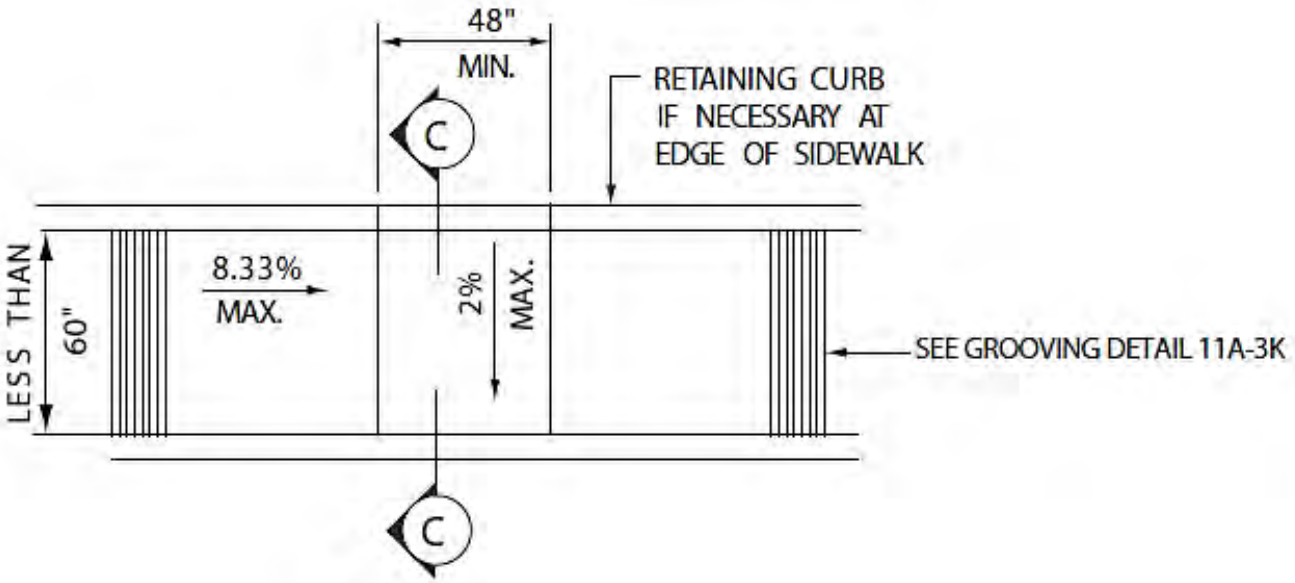


FIGURE 11A-3G—CURB DETAIL

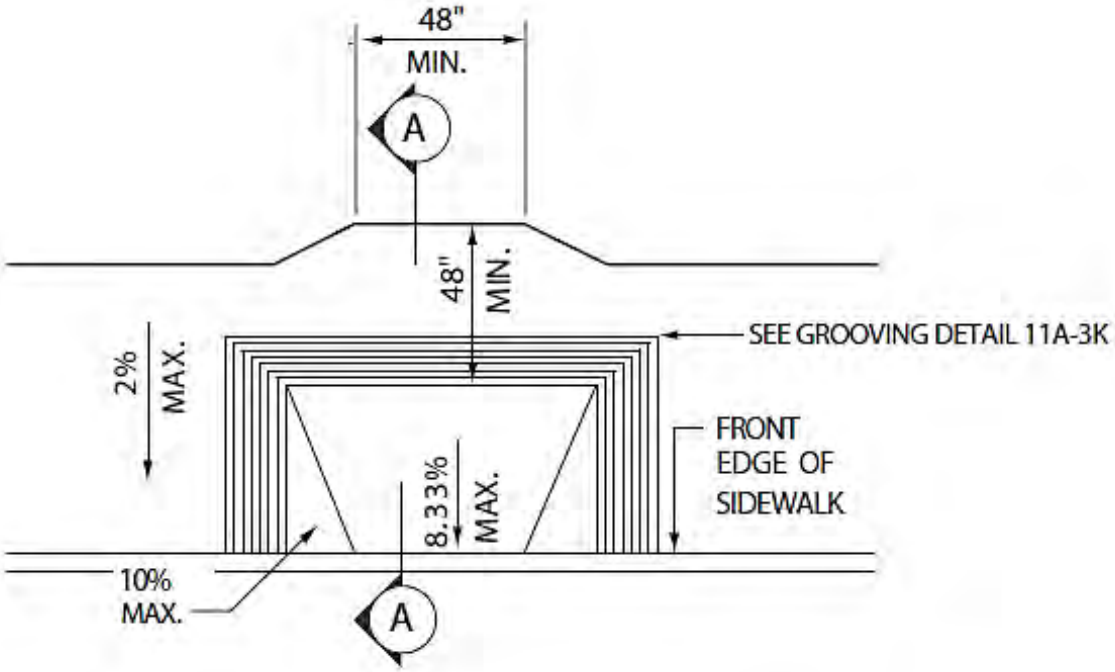


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FIGURE 11A-3H—CURB DETAIL

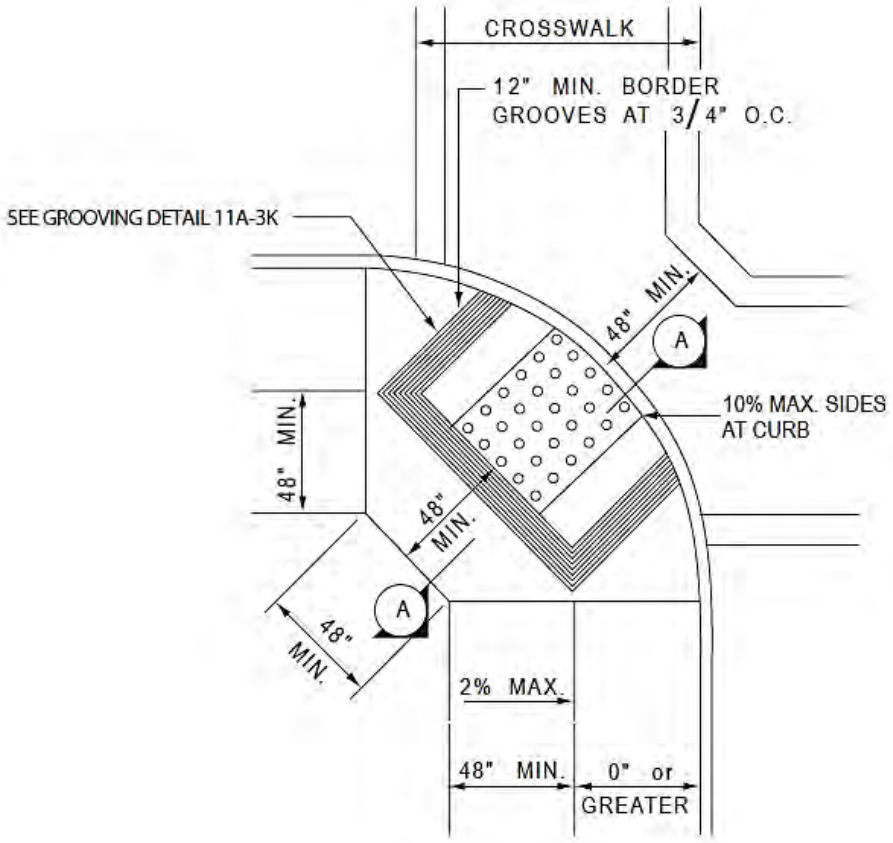


FIGURE 11A-3I—CURB DETAIL

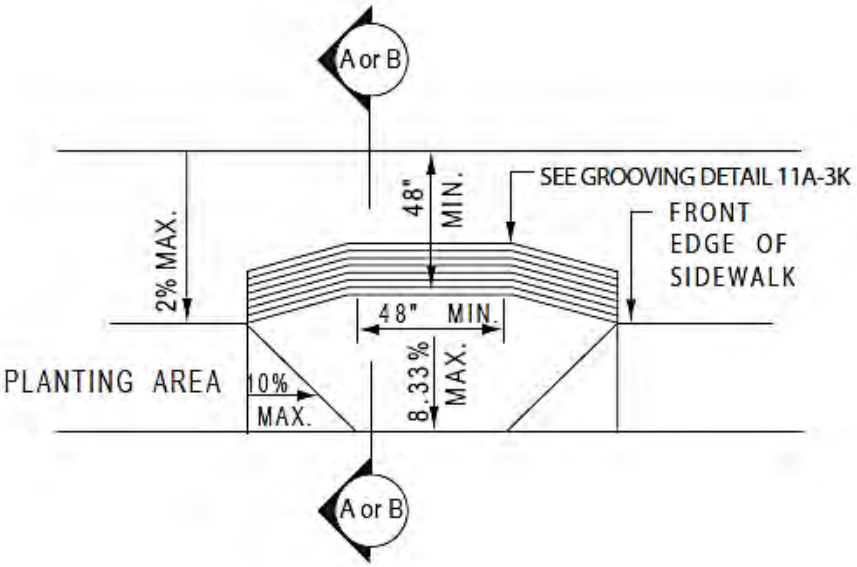


FIGURE 11A-3J—CURB DETAIL

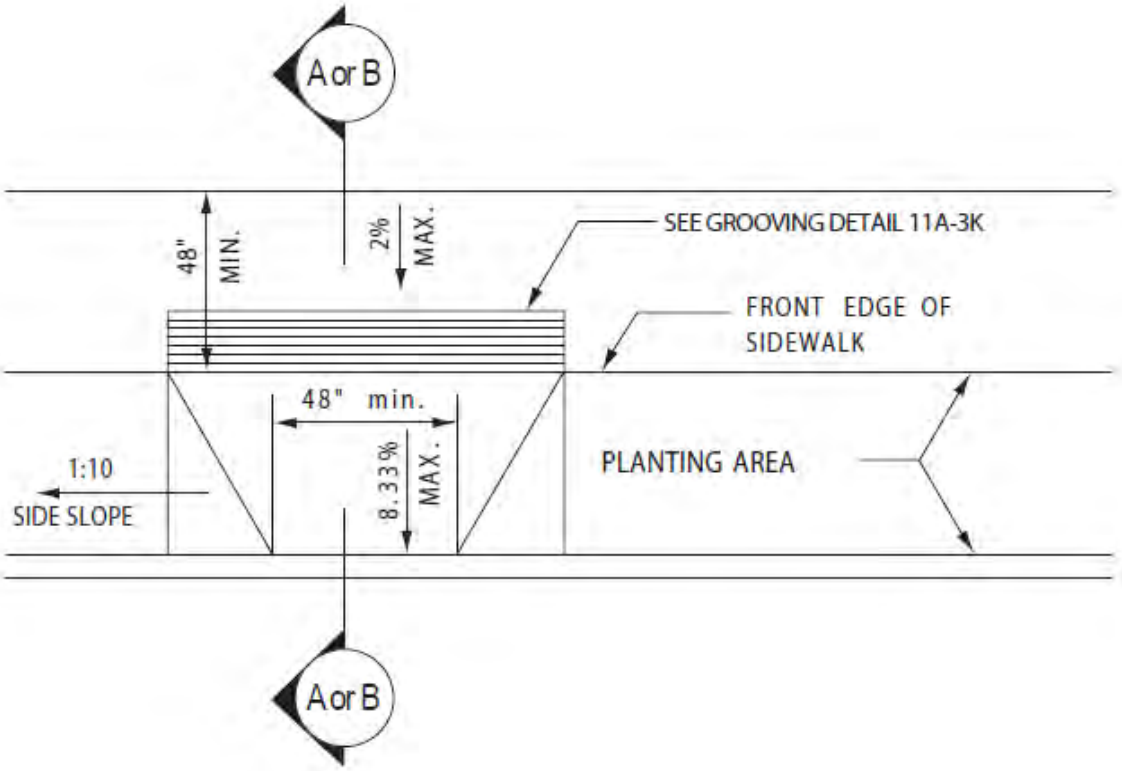
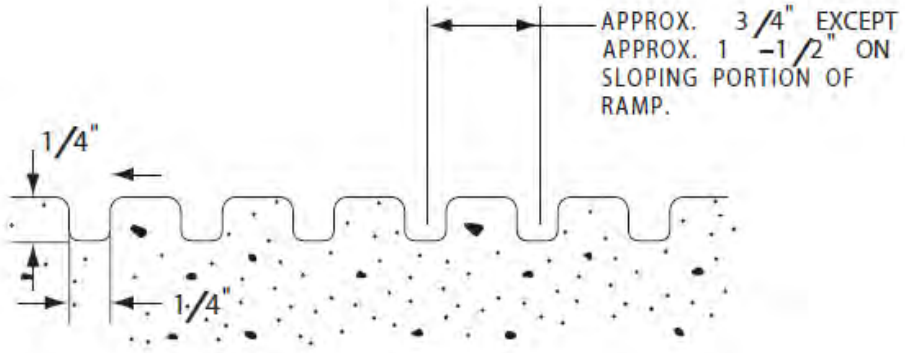
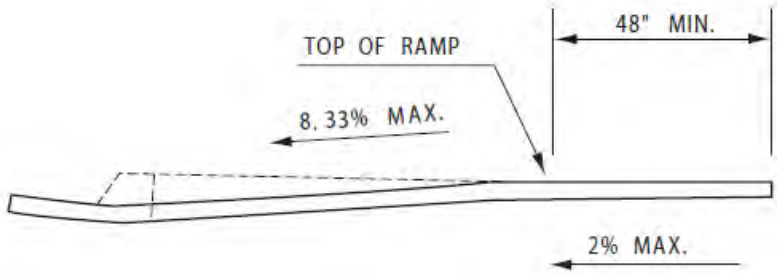


FIGURE 11A-3K—CURB DETAIL

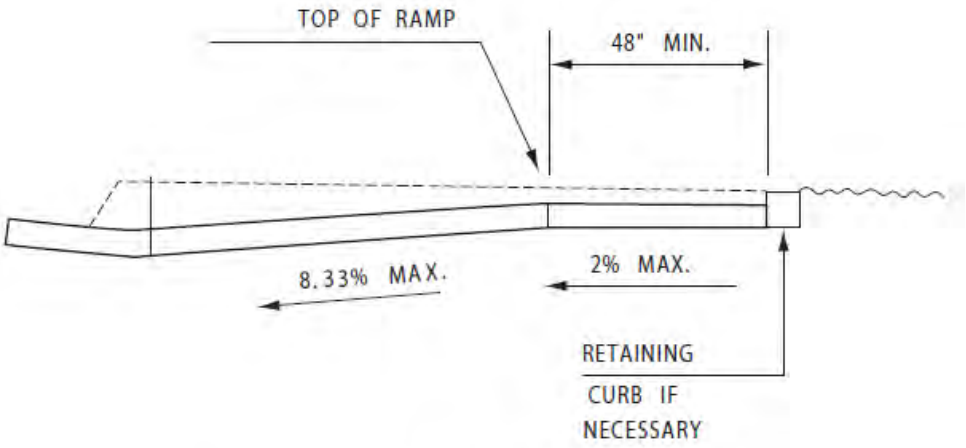


GROOVING DETAIL

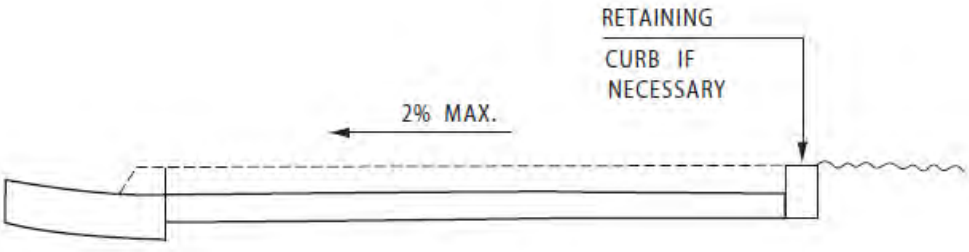
FIGURE 11A-3L—CURB SECTIONS



SECTION A-A



SECTION B-B
DEPRESS ENTIRE SIDEWALK AS REQUIRED



SECTION C-C

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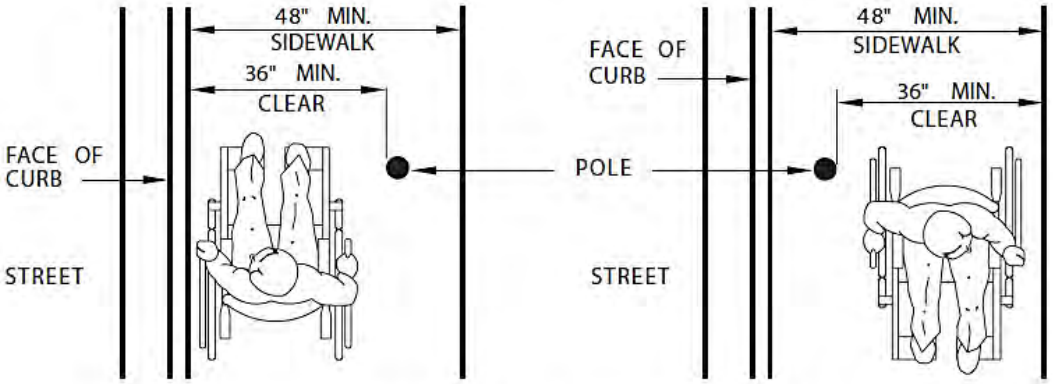
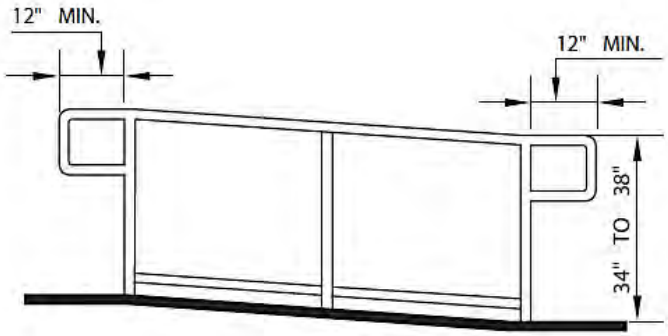
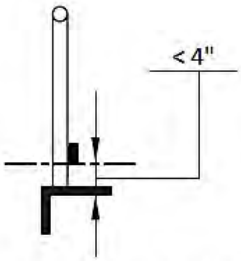
FIGURE 11A-5A—RAMPS AND SIDEWALKS



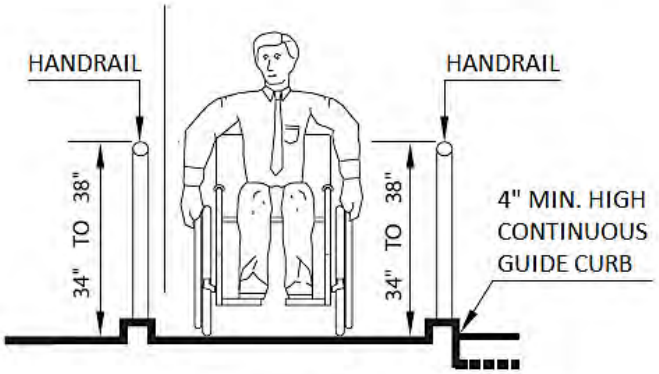
(a) SIDEWALK OBSTRUCTIONS



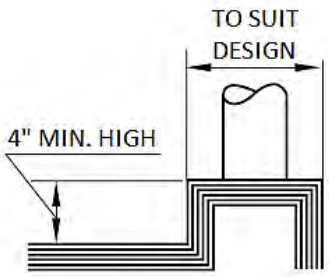
(b) HANDRAIL AND GUIDERAIL



GUIDE RAIL DETAIL



(c) GUIDE CURB



GUIDE CURB DETAIL

INTERNATIONAL CODE COUNCIL®

FIGURE 11A-6A—WARNING STRIPING AND HANDRAIL EXTENSIONS

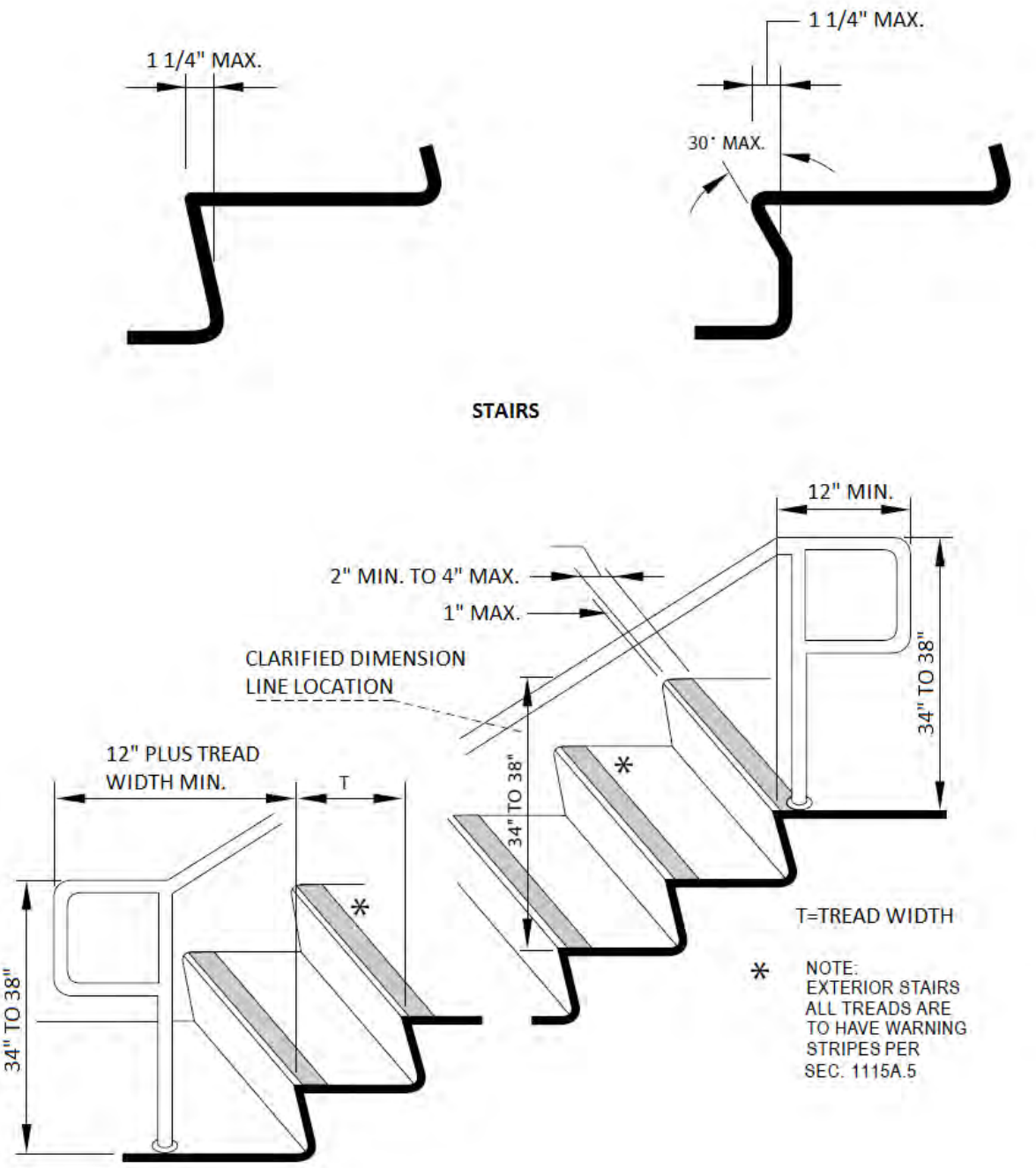


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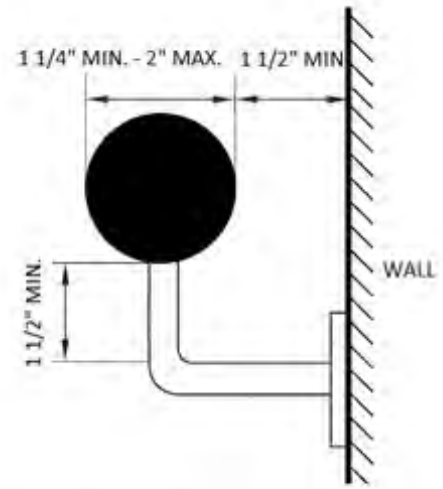
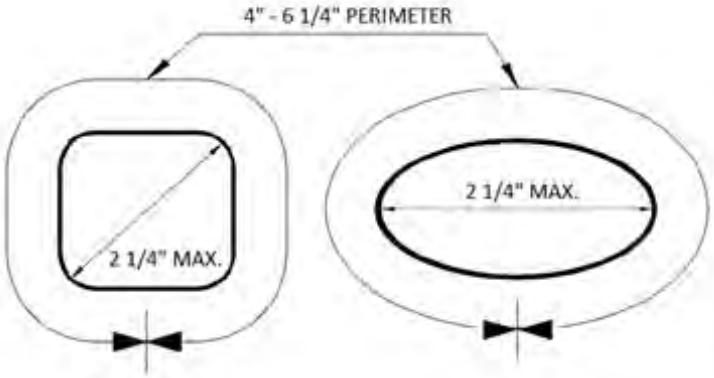
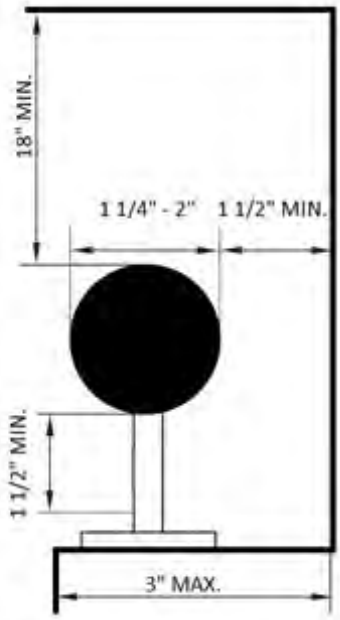
FIGURE 11A-6B—HANDRAILS



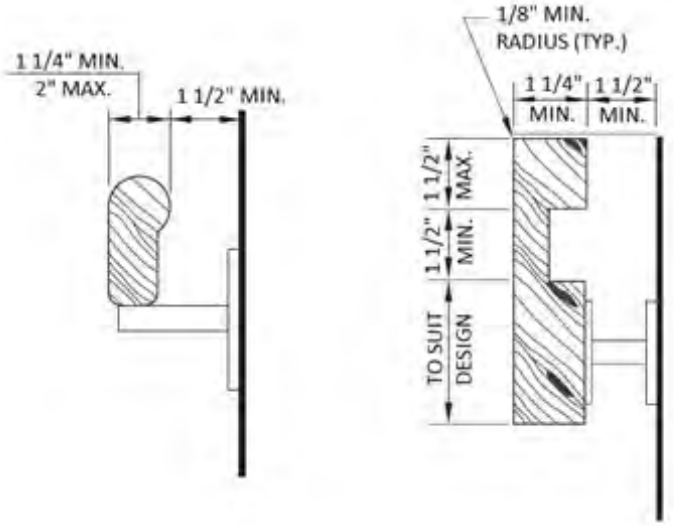
(a) HANDRAILS WITH CIRCULAR CROSS SECTION



(b) HANDRAILS WITH NON-CIRCULAR CROSS SECTION

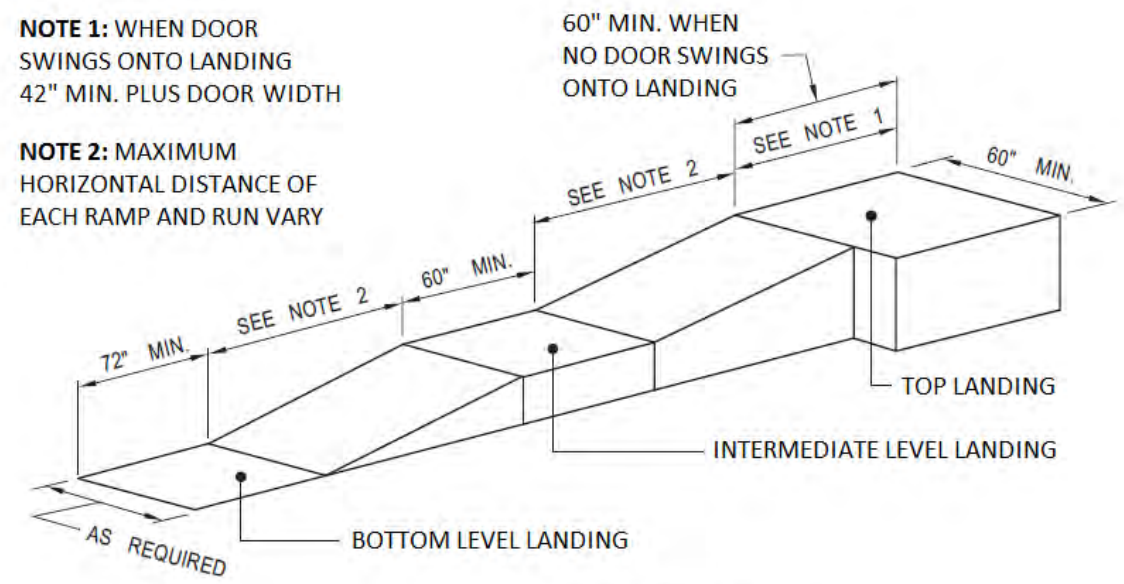


(c) HANDRAILS LOCATED IN A RECESS

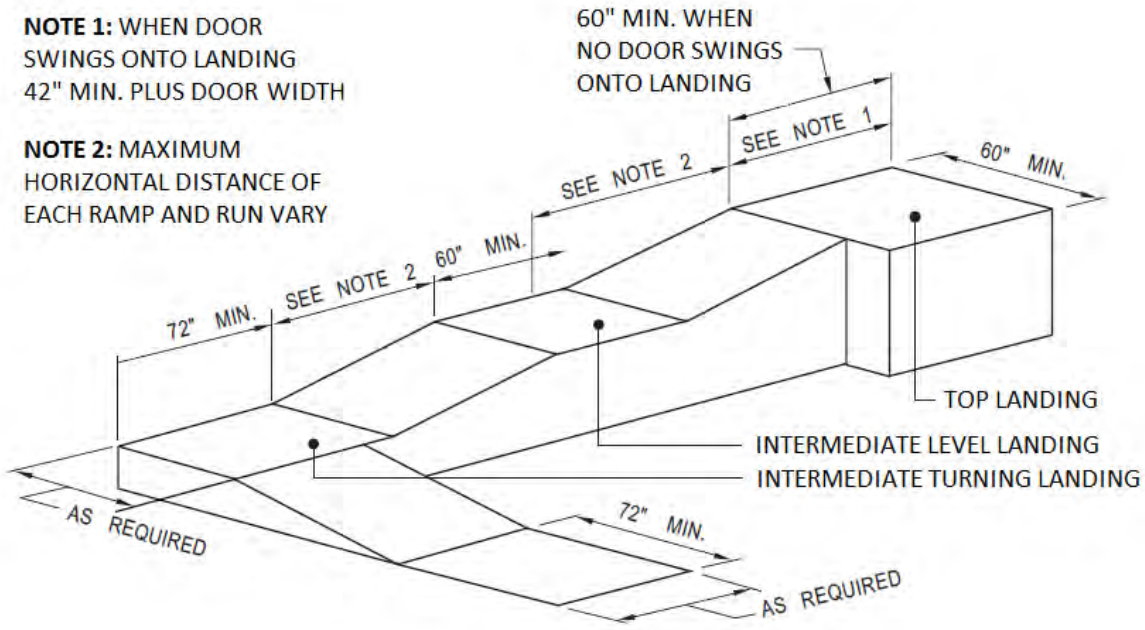


(d) HANDRAILS WITH EQUIVALENT GRIPPING SURFACES

FIGURE 11A-6C—RAMP DIMENSIONS

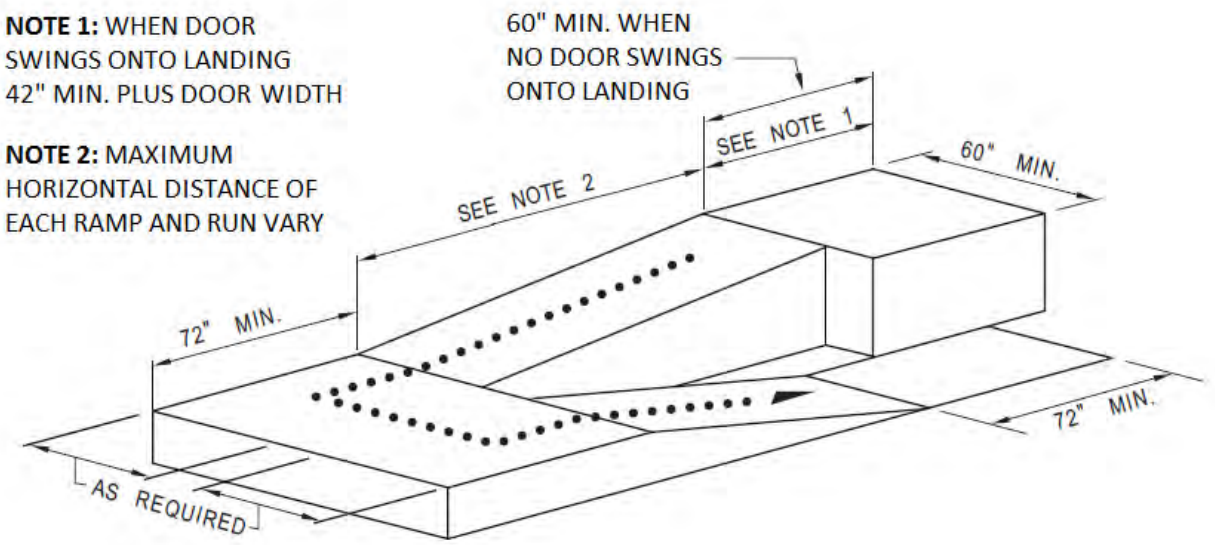

NOTE 1: WHEN DOOR SWINGS ONTO LANDING 42" MIN. PLUS DOOR WIDTH
NOTE 2: MAXIMUM HORIZONTAL DISTANCE OF EACH RAMP AND RUN VARY
60" MIN. WHEN NO DOOR SWINGS ONTO LANDING
SEE NOTE 1
60" MIN.
SEE NOTE 2
60" MIN.
SEE NOTE 2
72" MIN.
TOP LANDING
INTERMEDIATE LEVEL LANDING
AS REQUIRED
BOTTOM LEVEL LANDING

(a) STRAIGHT RAMP RUN

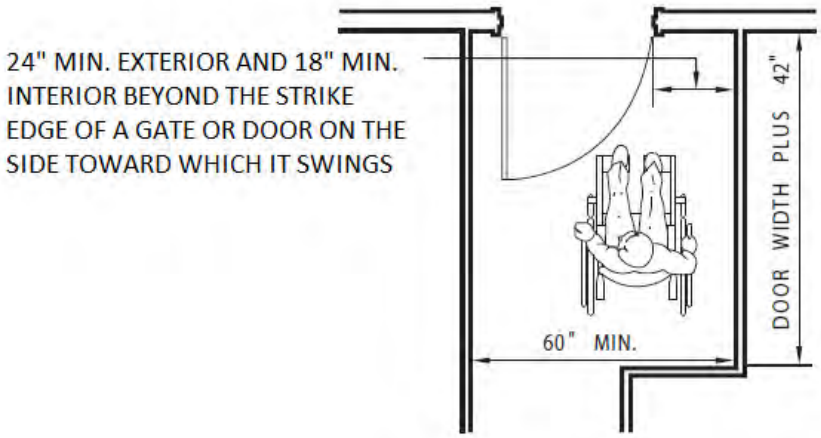

NOTE 1: WHEN DOOR SWINGS ONTO LANDING 42" MIN. PLUS DOOR WIDTH
NOTE 2: MAXIMUM HORIZONTAL DISTANCE OF EACH RAMP AND RUN VARY
60" MIN. WHEN NO DOOR SWINGS ONTO LANDING
SEE NOTE 1
60" MIN.
SEE NOTE 2
SEE NOTE 2
60" MIN.
72" MIN.
TOP LANDING
INTERMEDIATE LEVEL LANDING
INTERMEDIATE TURNING LANDING
AS REQUIRED
72" MIN.
AS REQUIRED

(b) RAMP WITH TURNING LANDING

FIGURE 11A-6D—RAMP LANDING AND DOORWAY

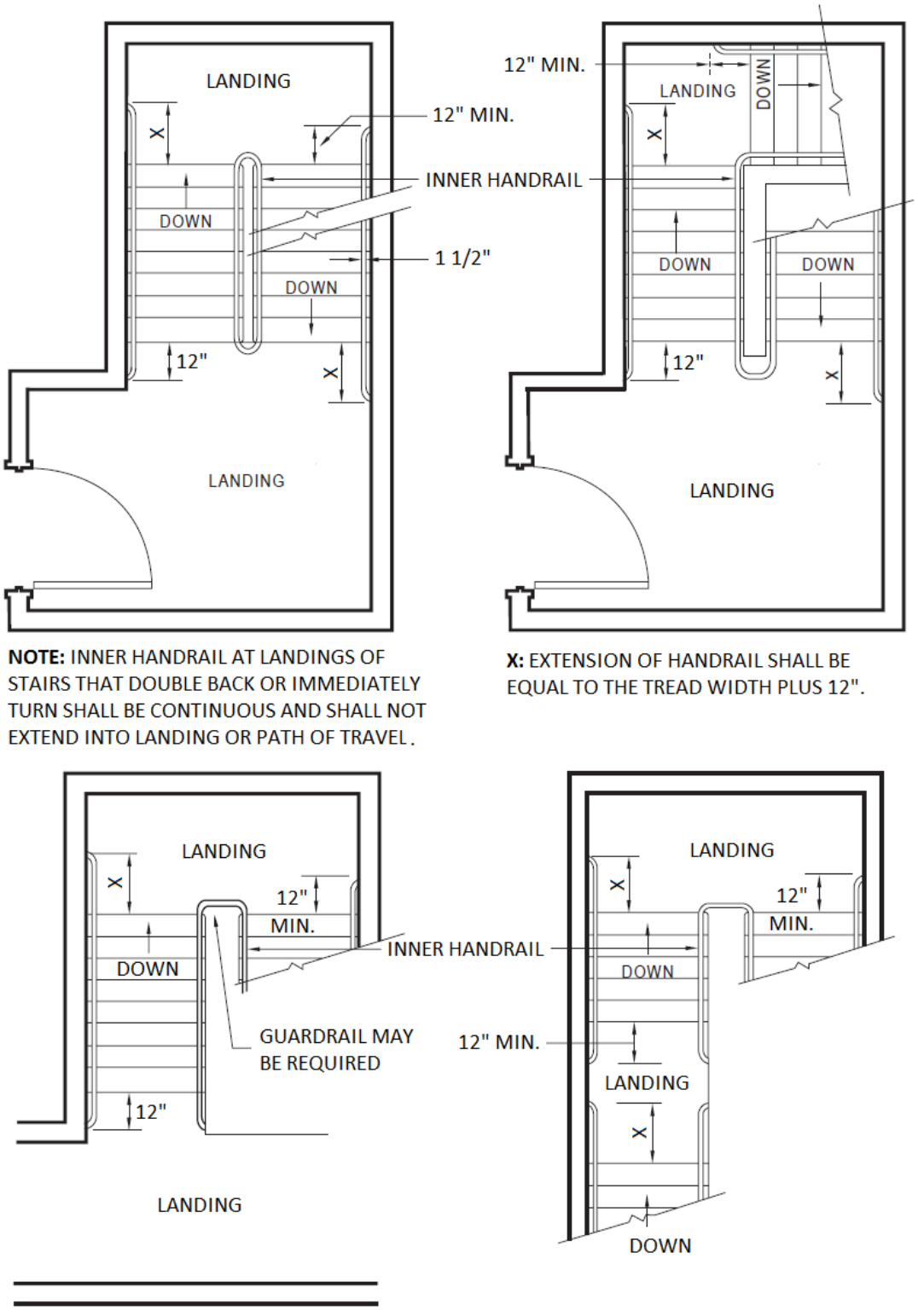

NOTE 1: WHEN DOOR SWINGS ONTO LANDING 42" MIN. PLUS DOOR WIDTH
NOTE 2: MAXIMUM HORIZONTAL DISTANCE OF EACH RAMP AND RUN VARY
60" MIN. WHEN NO DOOR SWINGS ONTO LANDING
SEE NOTE 1
SEE NOTE 2
60" MIN.
72" MIN.
72" MIN.
AS REQUIRED

(a) RAMP WITH INTERMEDIATE SWITCH BACK LANDING


24" MIN. EXTERIOR AND 18" MIN. INTERIOR BEYOND THE STRIKE EDGE OF A GATE OR DOOR ON THE SIDE TOWARD WHICH IT SWINGS
DOOR WIDTH PLUS 42"
60" MIN.

(b) RAMP LANDING AT DOORWAY

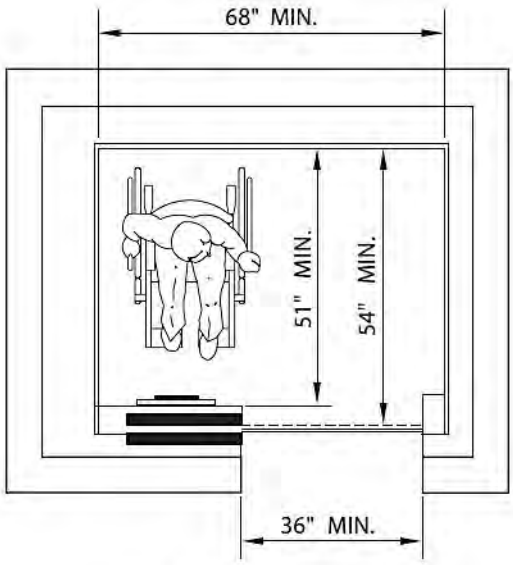
FIGURE 11A-6E—STAIR HANDRAILS



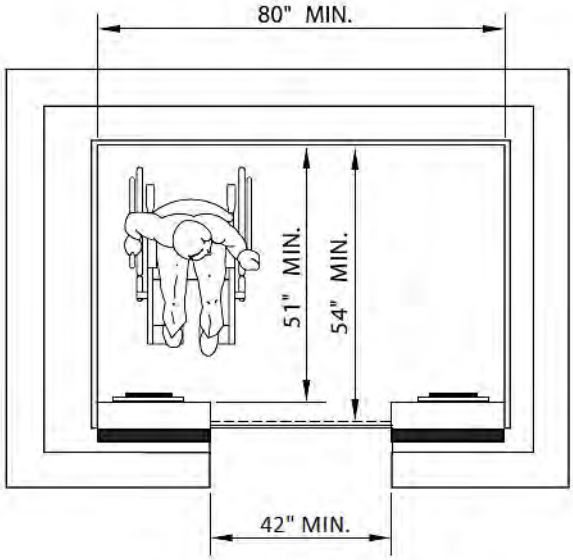
NOTE: INNER HANDRAIL AT LANDINGS OF STAIRS THAT DOUBLE BACK OR IMMEDIATELY TURN SHALL BE CONTINUOUS AND SHALL NOT EXTEND INTO LANDING OR PATH OF TRAVEL.

X: EXTENSION OF HANDRAIL SHALL BE EQUAL TO THE TREAD WIDTH PLUS 12".

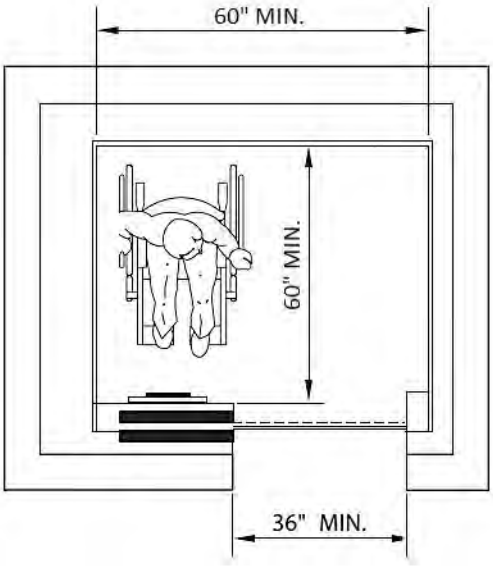
FIGURE 11A-7A—MINIMUM DIMENSIONS OF ELEVATOR CARS

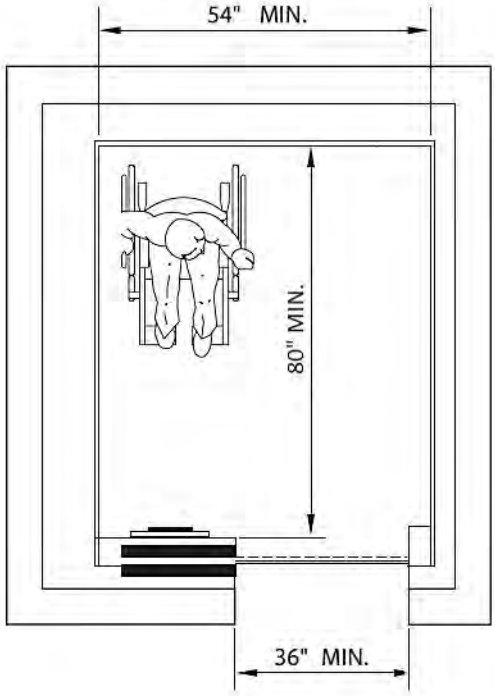


(a) SIDE OPENING DOOR



(b) CENTER OPENING DOOR





(c) DOOR AT ANY LOCATION

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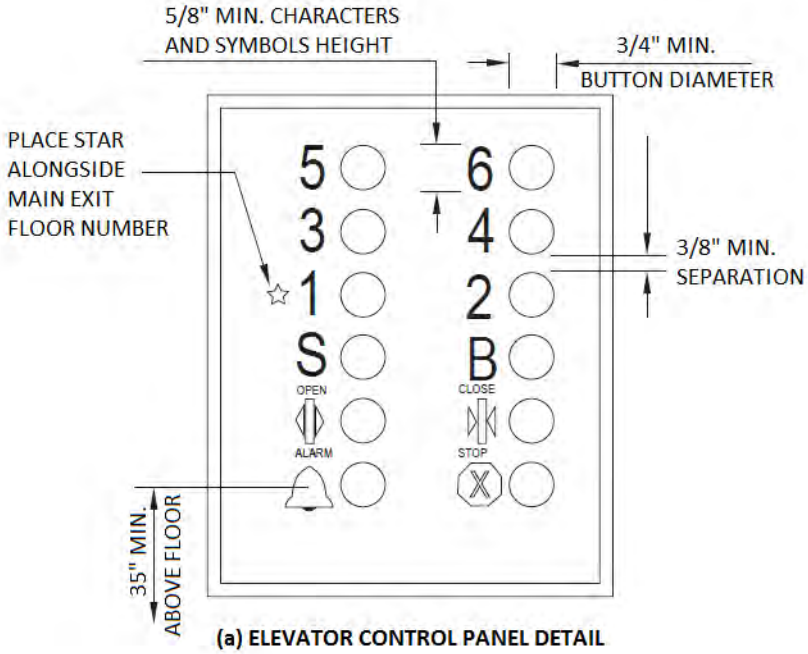
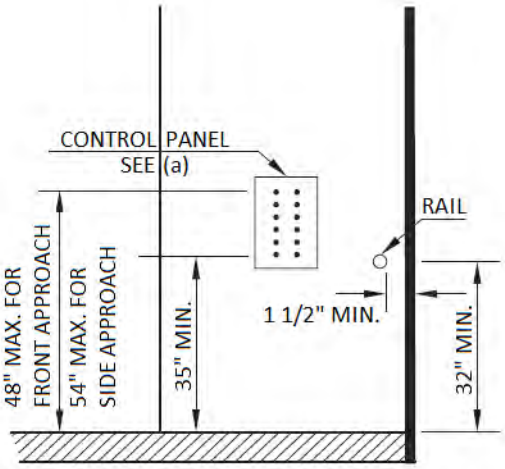
FIGURE 11A-7B—ELEVATOR CONTROL PANEL

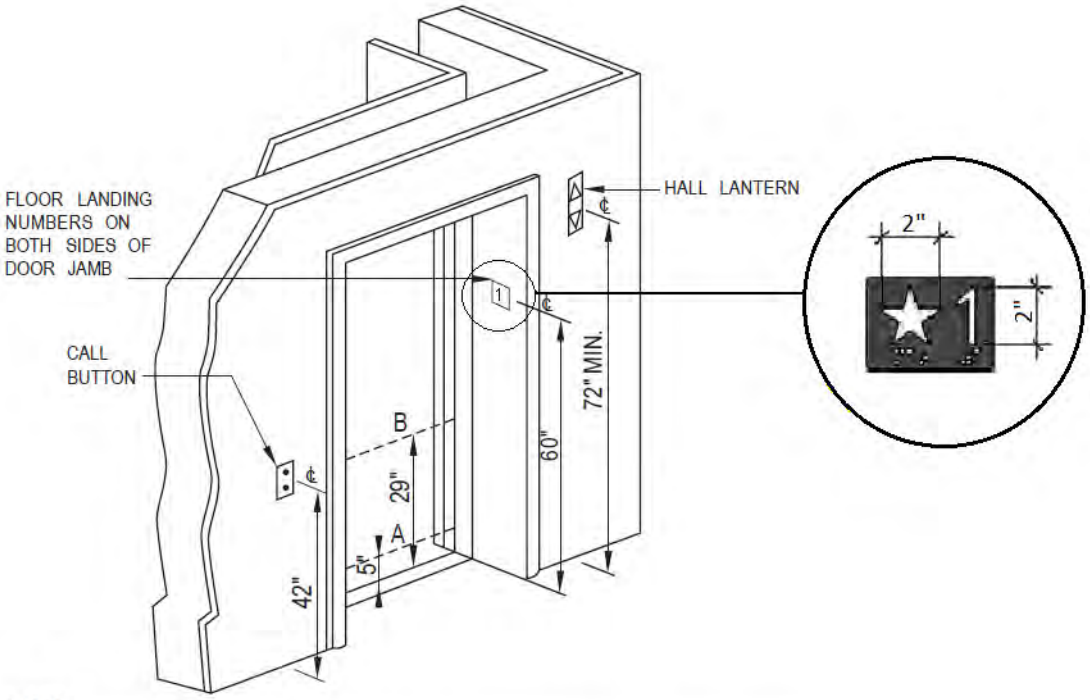


(a) ELEVATOR CONTROL PANEL DETAIL



(b) MAXIMUM INSTALLATION HEIGHTS ABOVE CAB FLOOR

FIGURE 11A-7C—HOISTWAY AND ELEVATOR ENTRANCES



NOTE:
THE AUTOMATIC DOOR REOPENING DEVICE IS ACTIVATED IF AN OBJECT PASSES THROUGH EITHER LINE A OR LINE B. LINE A AND LINE B REPRESENT THE VERTICAL LOCATION OF THE DOOR REOPENING DEVICE NOT REQUIRING CONTACT.

FIGURE 11A-7D—GRAPH OF TIMING EQUATION

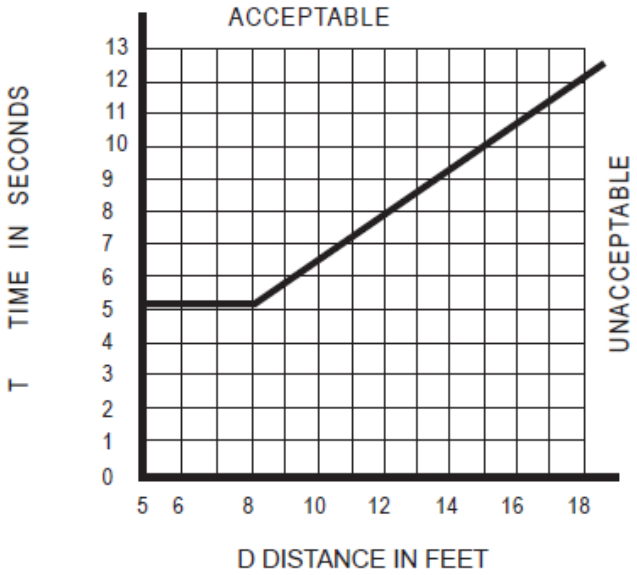


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FIGURE 11A-8A—MANEUVERING CLEARANCE AT SWINGING DOORS

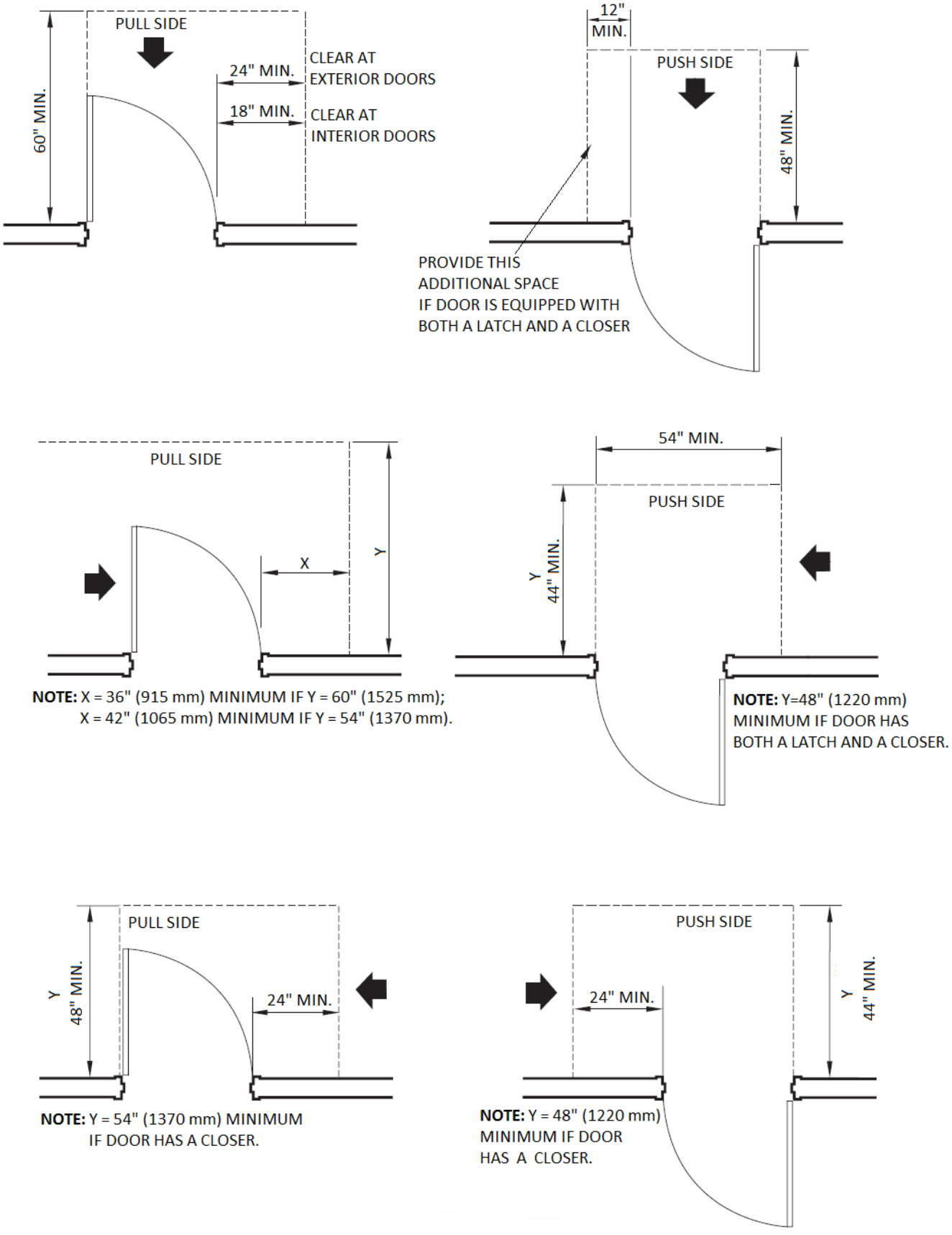
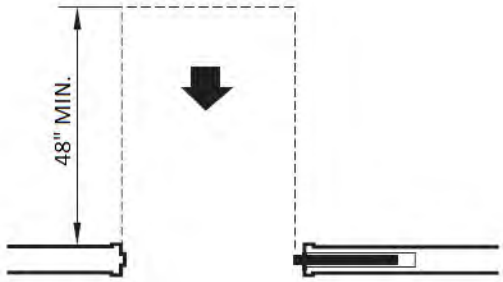
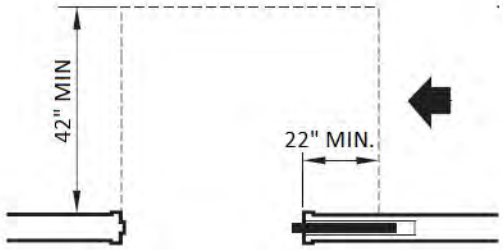


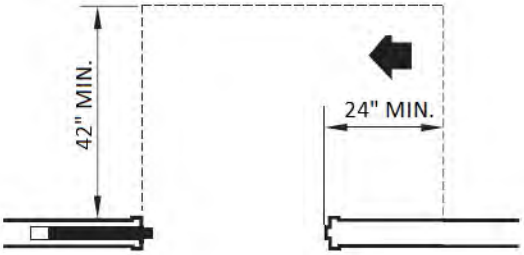
FIGURE 11A-8B—MANEUVERING CLEARANCE AT DOORWAYS, SLIDING DOORS AND FOLDING DOORS



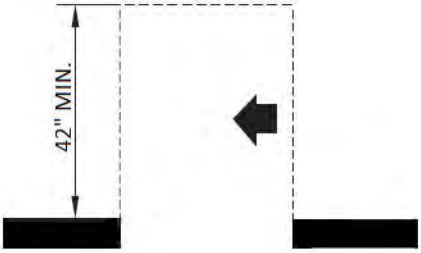
(a) FRONT APPROACH



(b) POCKET OR HINGE SIDE APPROACH



(c) STOP OR LATCH SIDE APPROACH



(d) SIDE APPROACH - DOORWAYS WITHOUT DOORS/GATES

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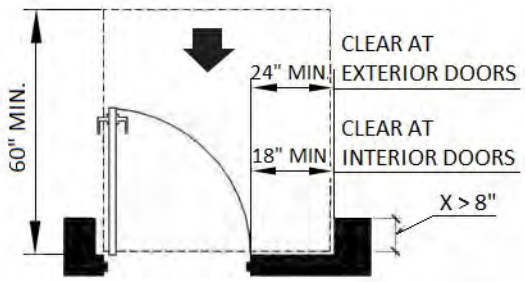
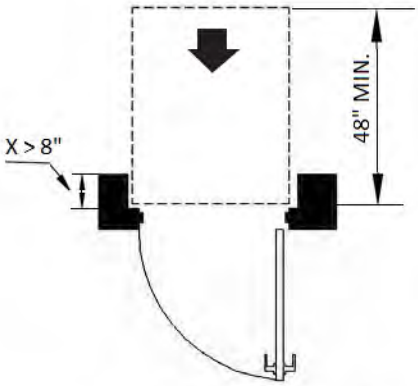
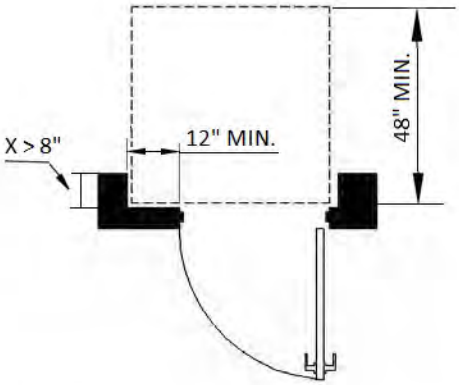
FIGURE 11A-8C—MANEUVERING CLEARANCES AT RECESSED DOORS



(a) PULL SIDE APPROACH

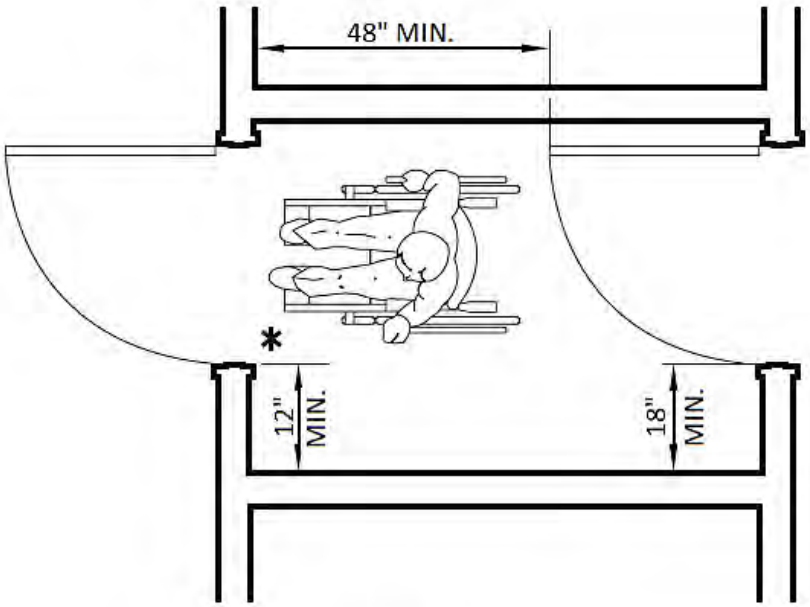


(b) PUSH SIDE APPROACH



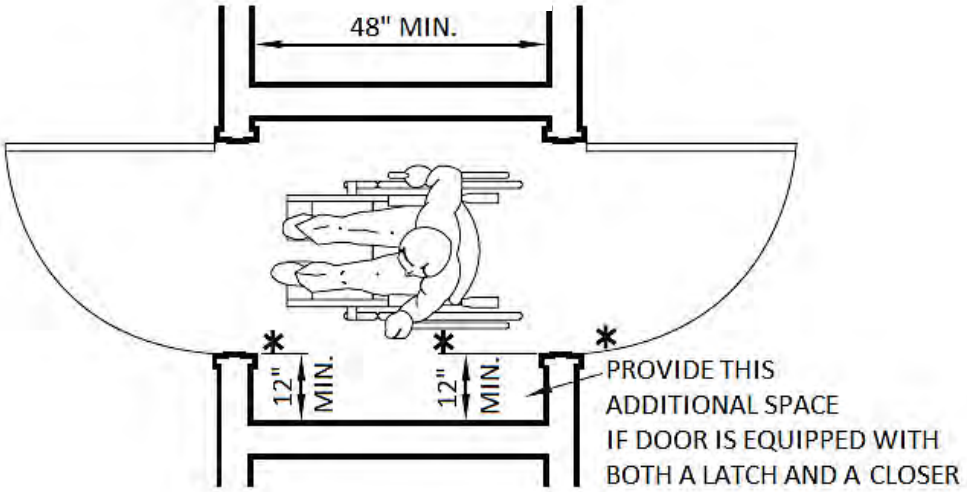
(c) PUSH SIDE APPROACH - DOOR WITH BOTH A LATCH AND A CLOSER

FIGURE 11A-8G—VESTIBULE



(a) DOOR IN SERIES

(a) DOORS IN SERIES



(b) BOTH DOORS OPEN OUT

(SERVING OTHER THAN A REQUIRED EXIT STAIRWAY)

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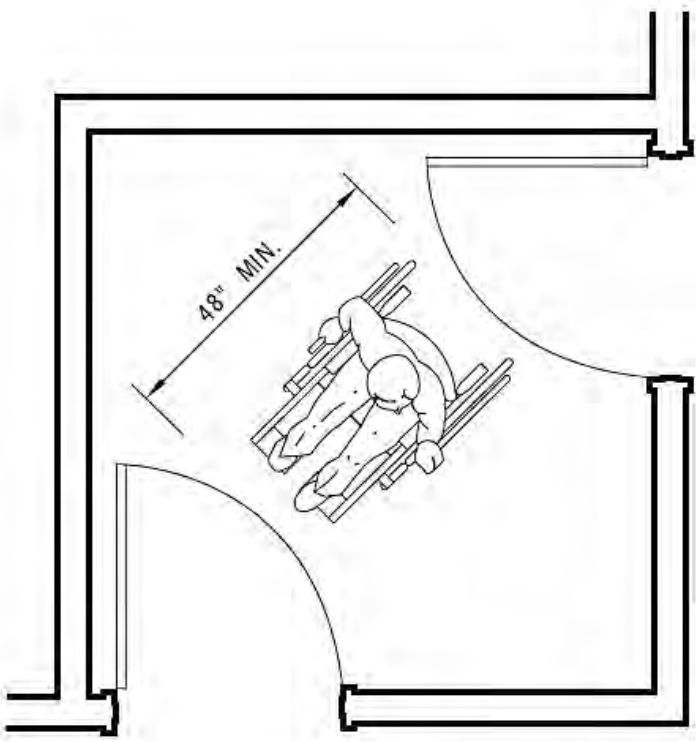
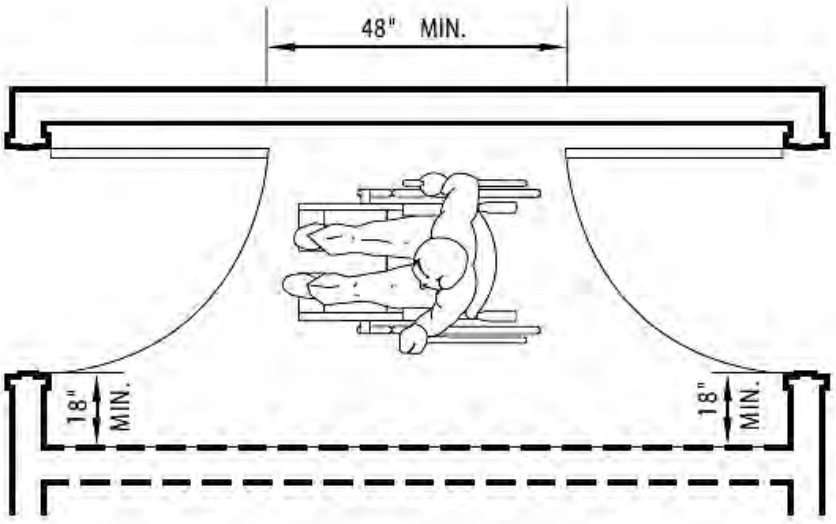
FIGURE 11A-8H—VESTIBULE
(SERVING OTHER THAN A REQUIRED EXIT STAIRWAY)



(a) DOORS AT ADJACENT WALLS



(b) DOORS AT OPPOSITE WALLS

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FIGURE 11A-8I—THRESHOLDS

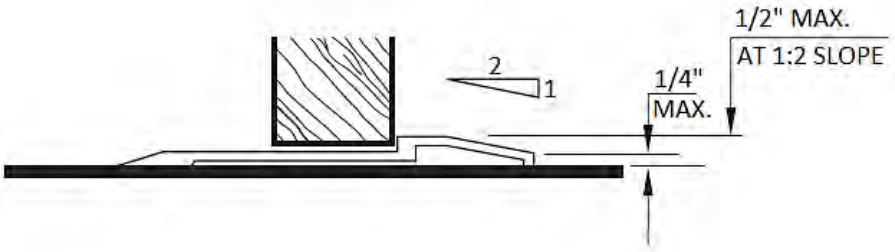

FIGURE 11A-8J—PLATFORM AT SECONDARY EXTERIOR DOOR

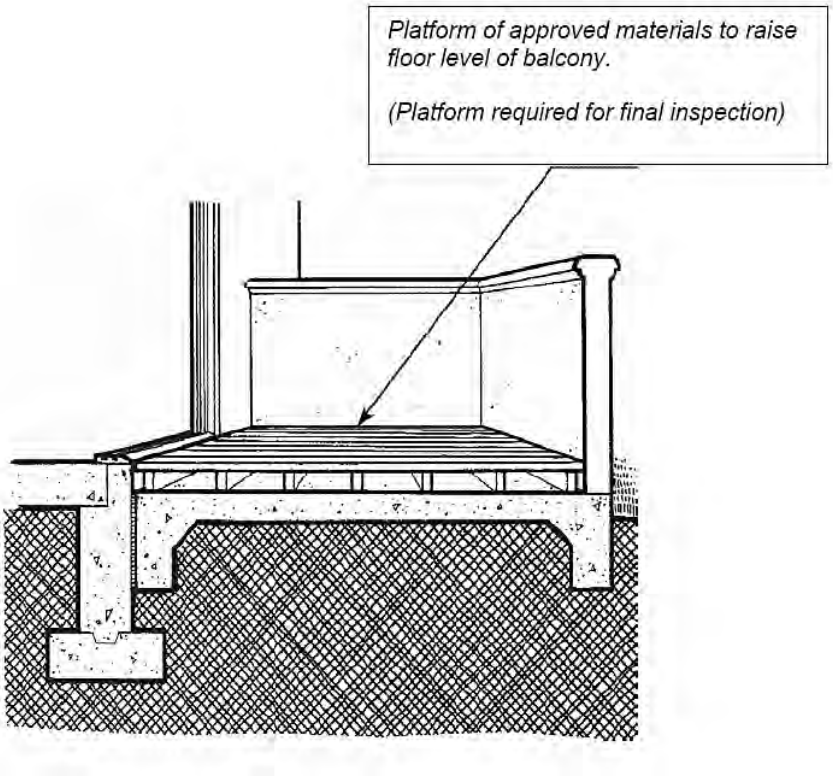

FIGURE 11A-8K—RAMP AT SECONDARY EXTERIOR DOOR

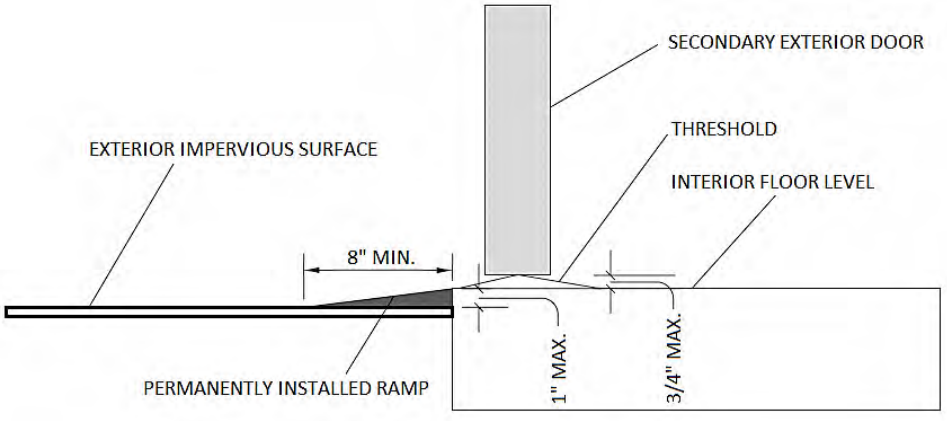

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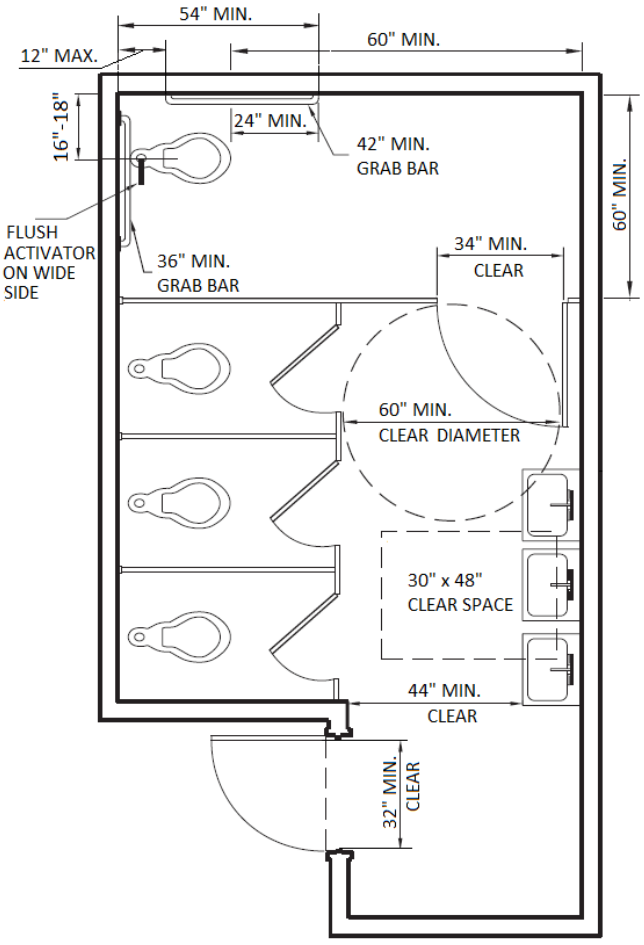
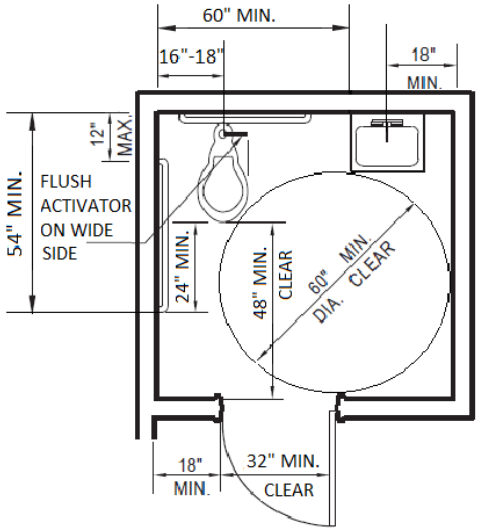
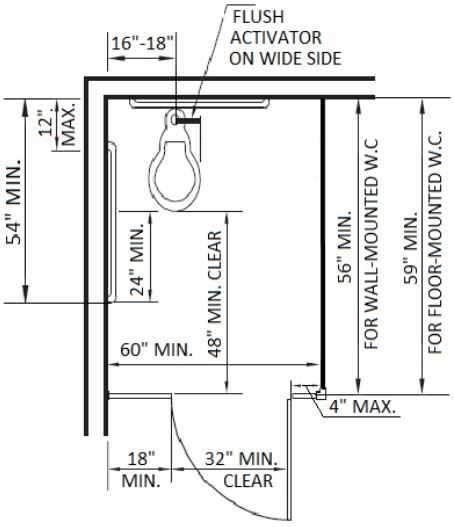
FIGURE 11A-9A—TOILET FACILITIES



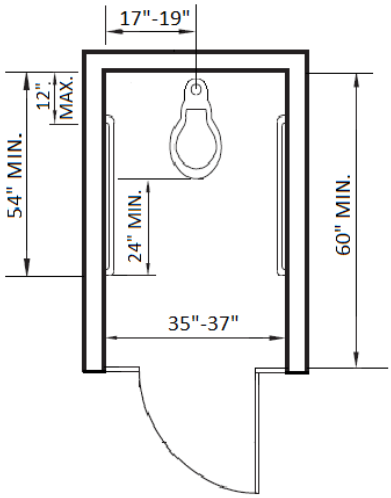
(a) MULTIPLE-ACCOMMODATION TOILET FACILITY



(b) SINGLE-ACCOMMODATION TOILET FACILITY

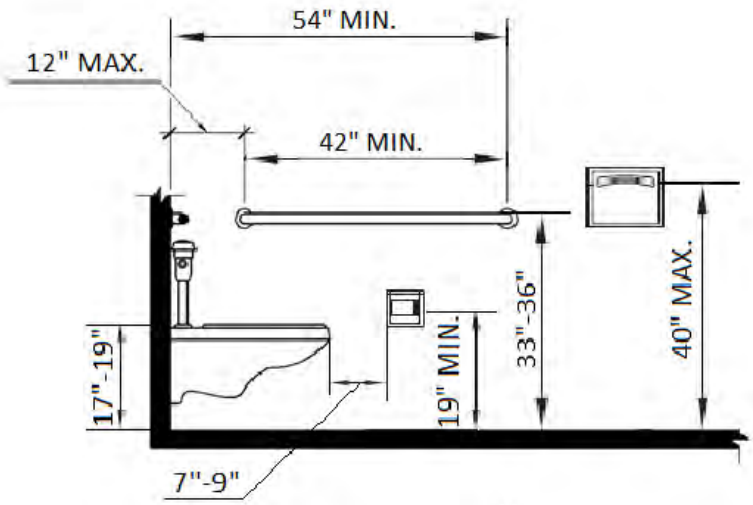


(c) ACCESSIBLE WATER CLOSET COMPARTMENT WITHIN MULTIPLE-ACCOMMODATION TOILET FACILITY

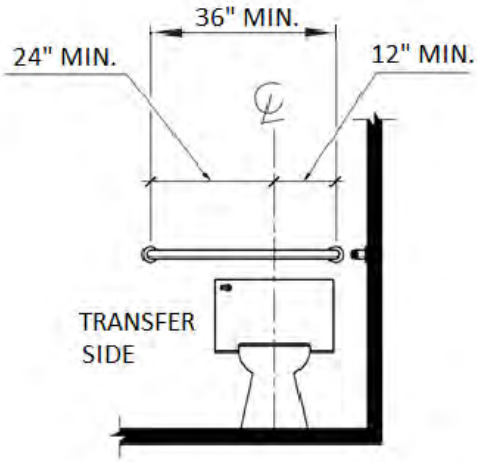


(d) AMBULATORY ACCESSIBLE COMPARTMENT

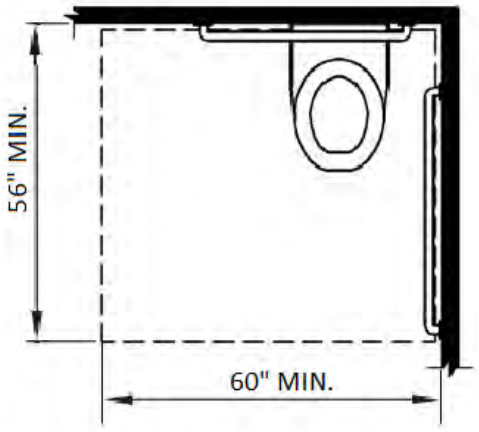
FIGURE 11A-9B—WATER CLOSETS



(a) SIDE VIEW

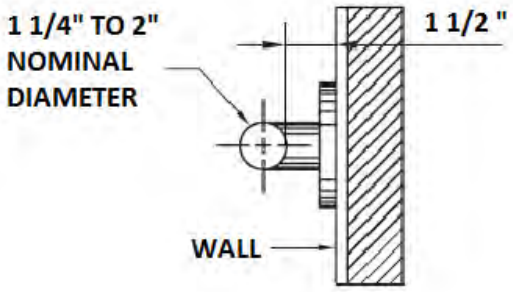


(b) FRONT VIEW

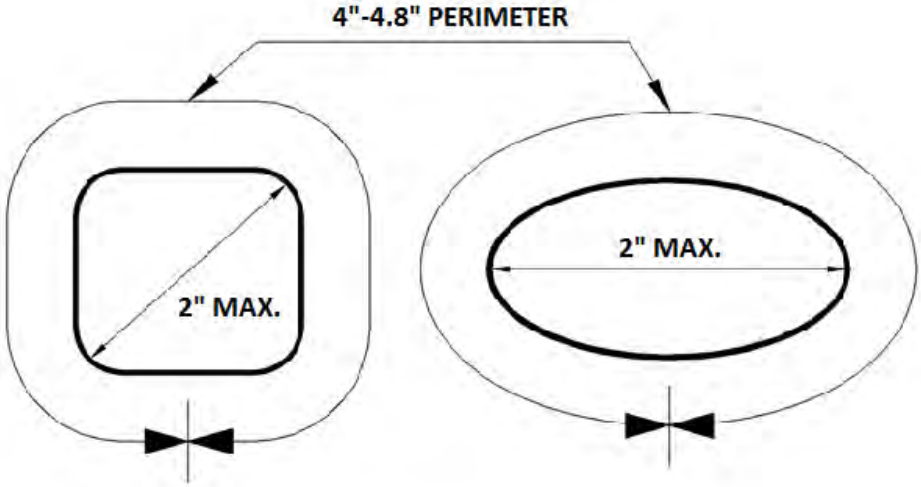


(c) CLEAR FLOOR SPACE AT WATER CLOSETS

FIGURE 11A-9C—GRAB BARS



(a) SECTION THROUGH TYPICAL CIRCULAR GRAB BAR



(b) NON-CIRCULAR CROSS SECTIONS

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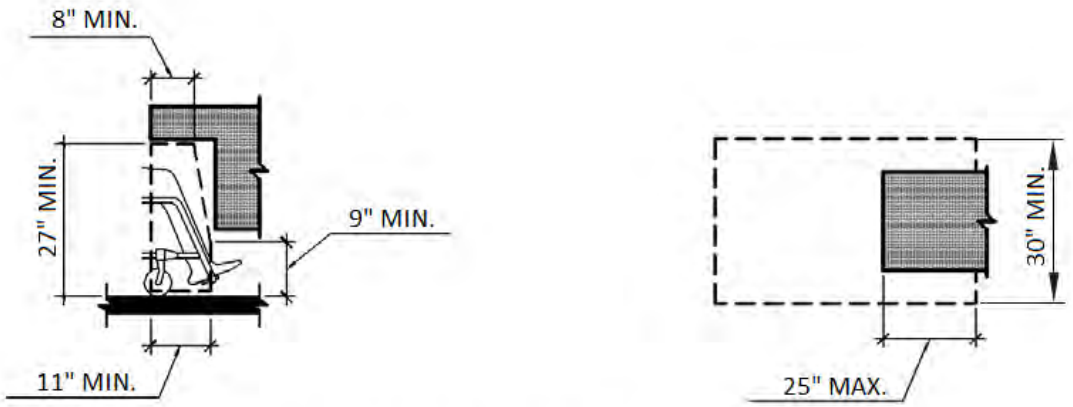
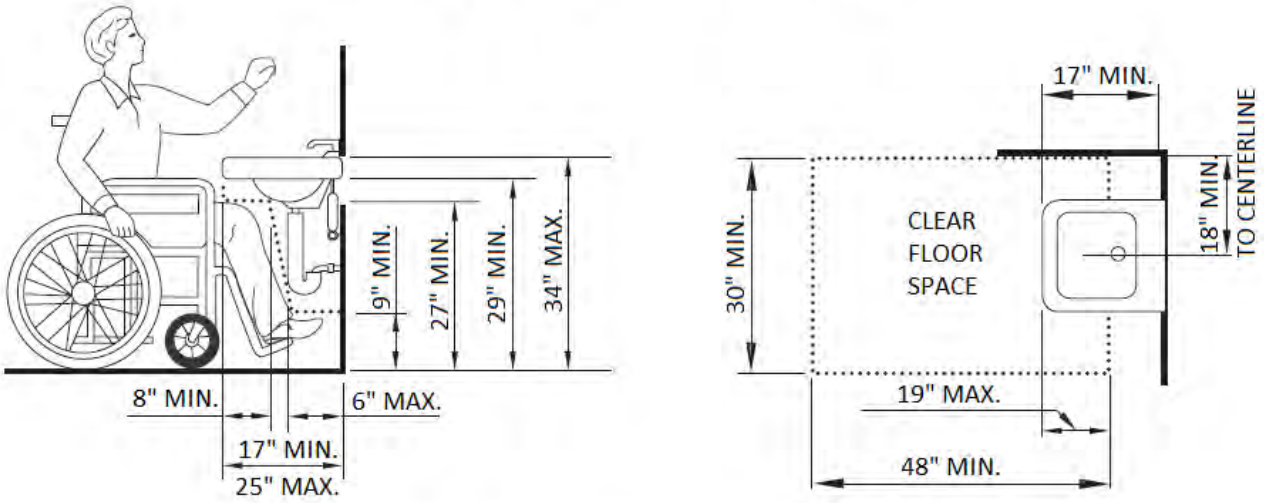
FIGURE 11A-9D—KNEE AND TOE SPACE



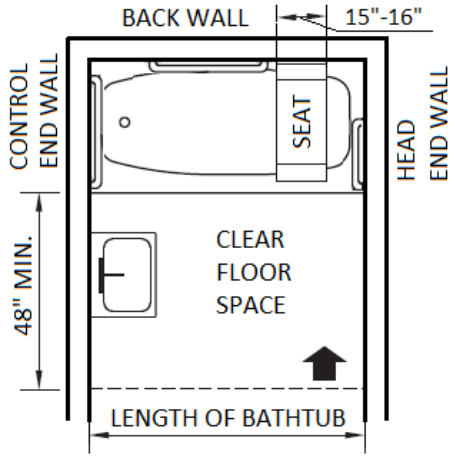
(a) KNEE SPACE - GENERAL REQUIREMENT

(b) TOE SPACE - GENERAL REQUIREMENT

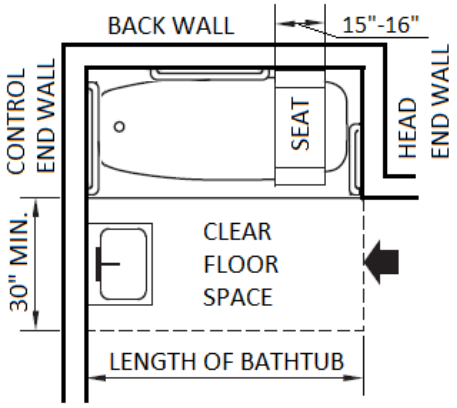


(c) KNEE AND TOE SPACE FOR LAVATORIES

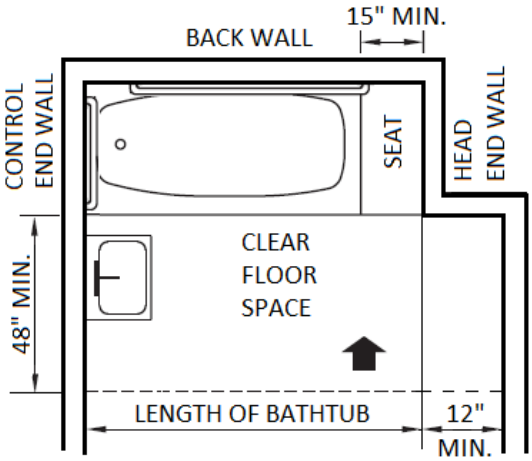
FIGURE 11A-9E—CLEAR FLOOR SPACE AT BATHTUBS



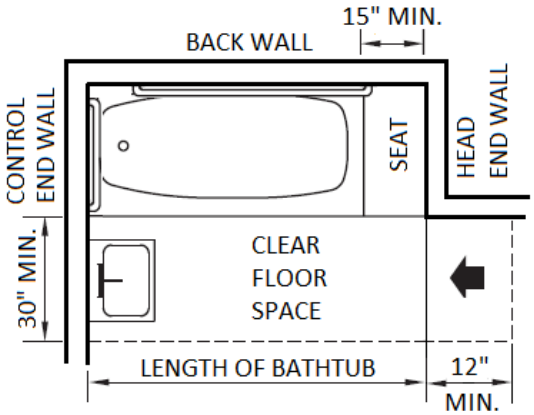
(a) REMOVABLE SEAT IN TUB - FRONT APPROACH



(b) REMOVABLE SEAT IN TUB - SIDE APPROACH



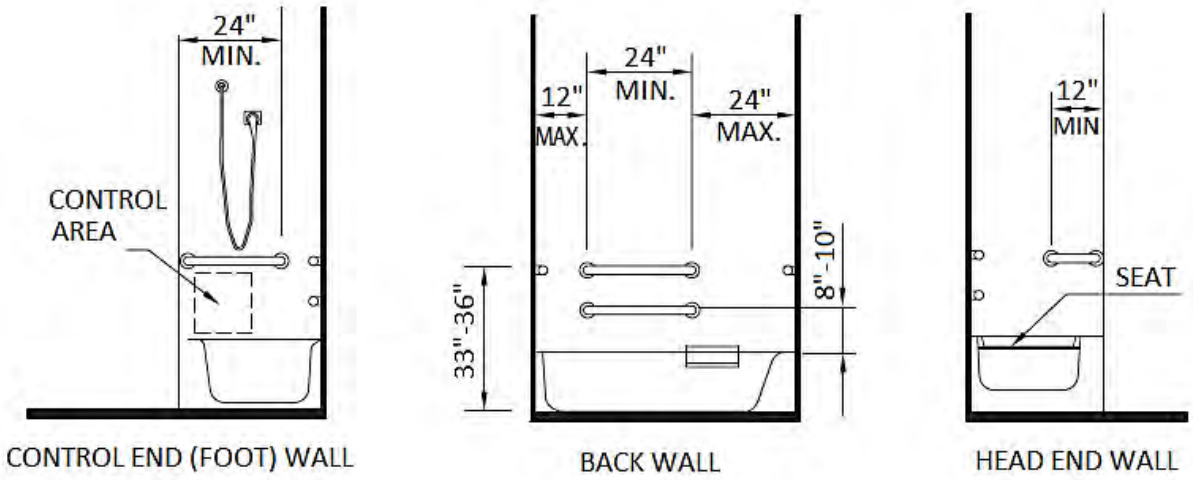
(c) PERMANENT SEAT IN TUB - FRONT APPROACH



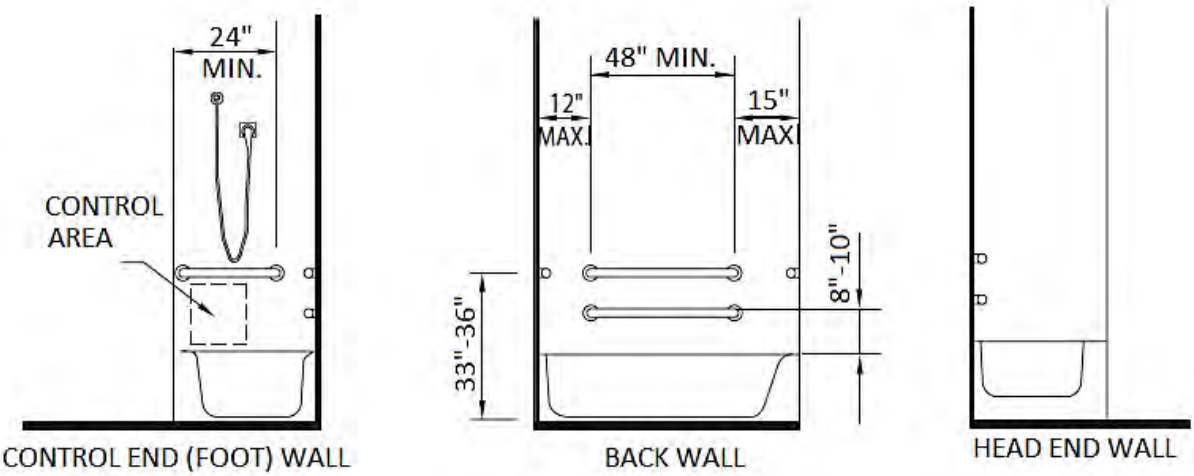
(d) PERMANENT SEAT IN TUB - SIDE APPROACH

NOTE: SEE FIGURE 11A-9F FOR SIZE OF GRAB BARS

FIGURE 11A-9F—GRAB BARS AT BATHTUBS



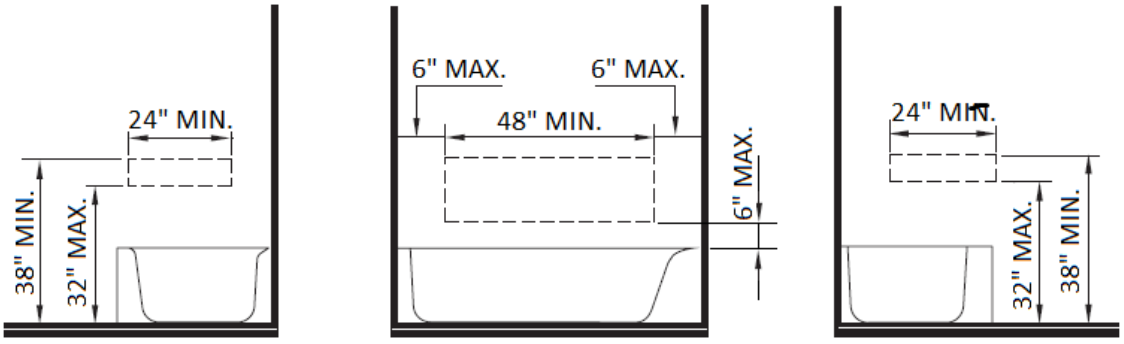
(a) WITH REMOVABLE SEAT IN TUB



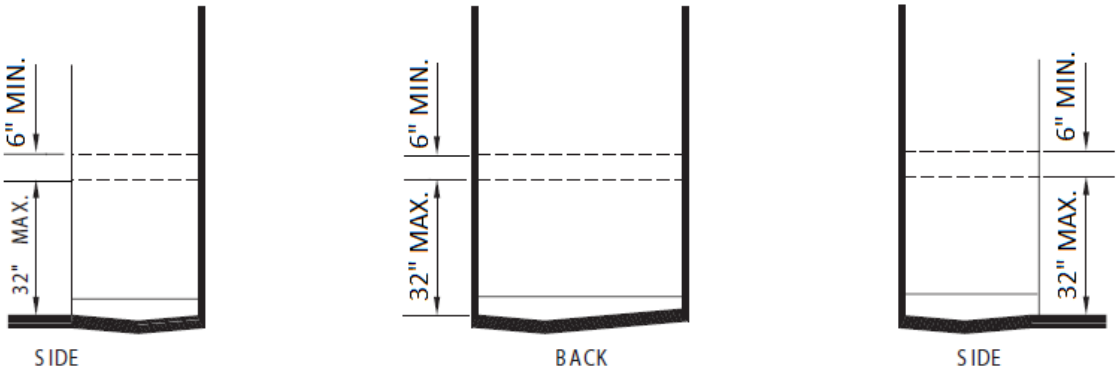
(b) WITH PERMANENT SEAT AT HEAD OF TUB

FIGURE 11A-9G—REINFORCEMENT FOR GRAB BARS

(a) GRAB BAR REINFORCEMENT FOR ADAPTABLE WATER CLOSETS



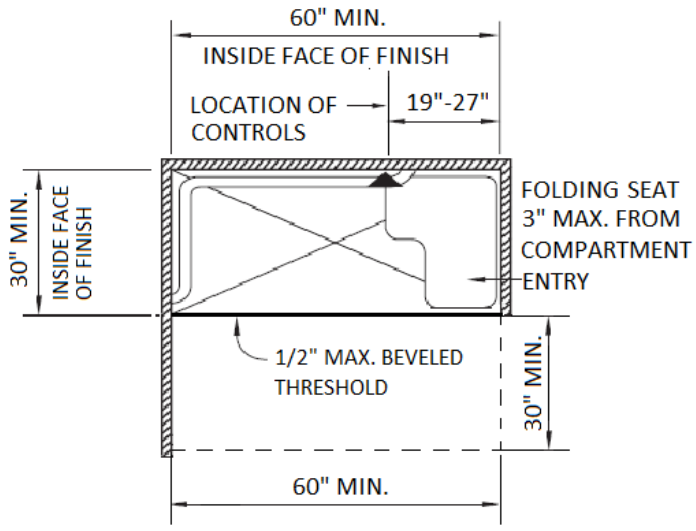
(b) GRAB BAR REINFORCEMENT FOR ADAPTABLE BATHTUBS

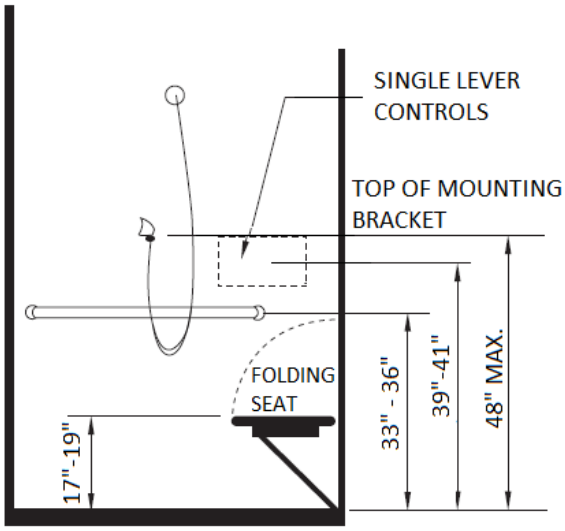


(c) GRAB BAR REINFORCEMENT FOR ADAPTABLE SHOWERS

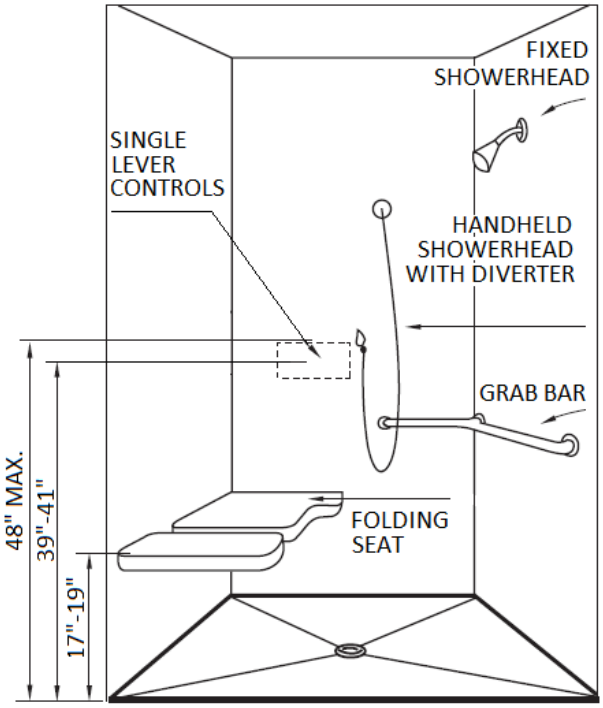
AREAS OUTLINED IN DASHED LINES REPRESENT LOCATION FOR FUTURE INSTALLATION OF GRAB BARS

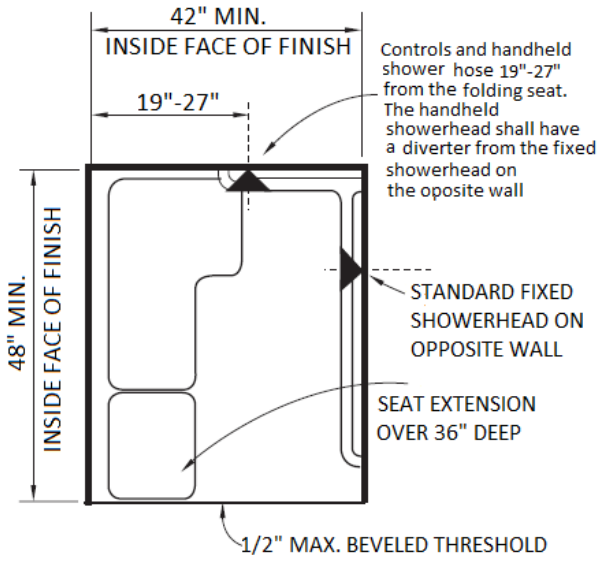
FIGURE 11A-9H—STANDARD ROLL-IN SHOWER





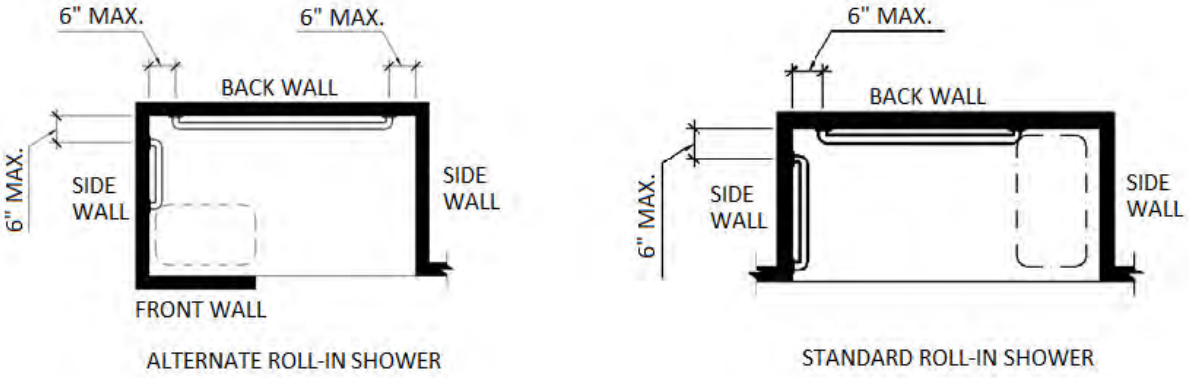
(a) 60" x 30" ROLL-IN SHOWER




42" MIN.
INSIDE FACE OF FINISH
19"-27"
Controls and handheld shower hose 19"-27" from the folding seat. The handheld showerhead shall have a diverter from the fixed showerhead on the oposite wall
48" MIN.
INSIDE FACE OF FINISH
STANDARD FIXED SHOWERHEAD ON OPPOSITE WALL
SEAT EXTENSION OVER 36" DEEP
1/2" MAX. BEVELED THRESHOLD

(b) 42" x 48" ROLL-IN SHOWER

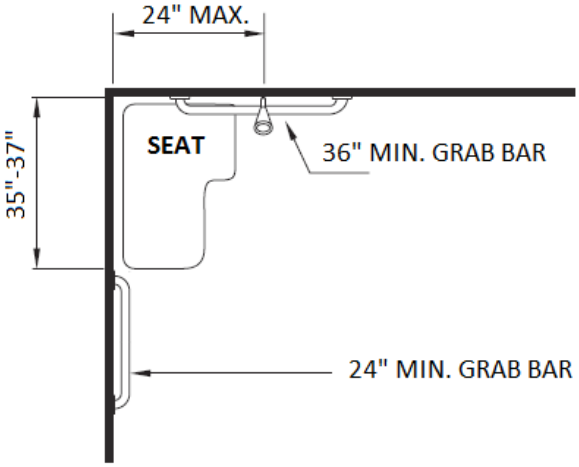
FIGURE 1A-9I—SHOWER SEATS AND GRAB BARS



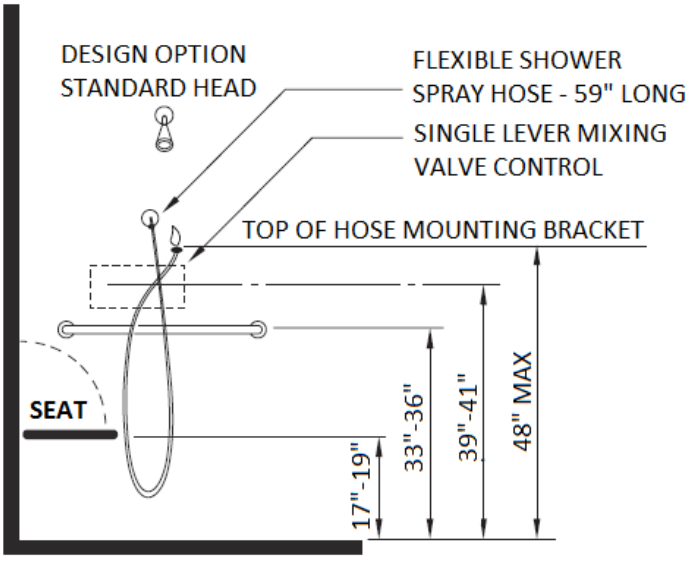
(a) GRAB BARS

(b) SHOWER SEATS

FIGURE 11A-9J—OPEN SHOWER



(a) PLAN VIEW



(b) ELEVATION

FIGURE 11A-9K—ALTERNATE ROLL-IN SHOWER

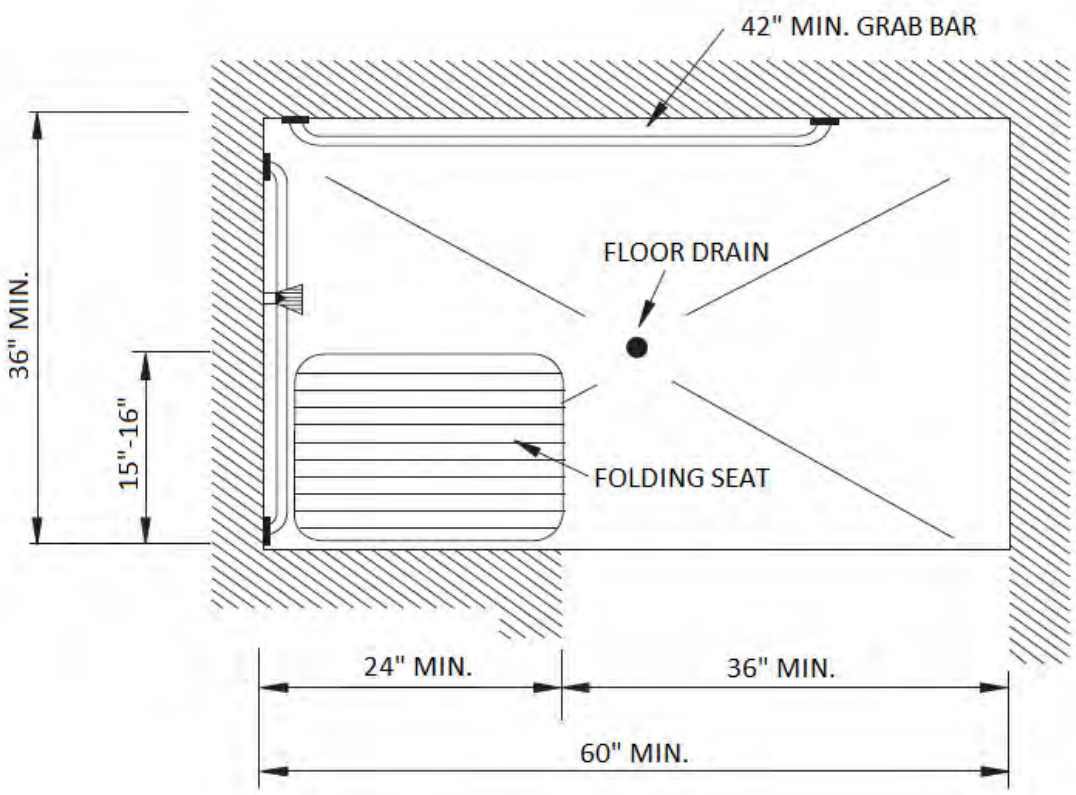


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FIGURE 11A-9L—SHOWER WITH WATER CLOSET

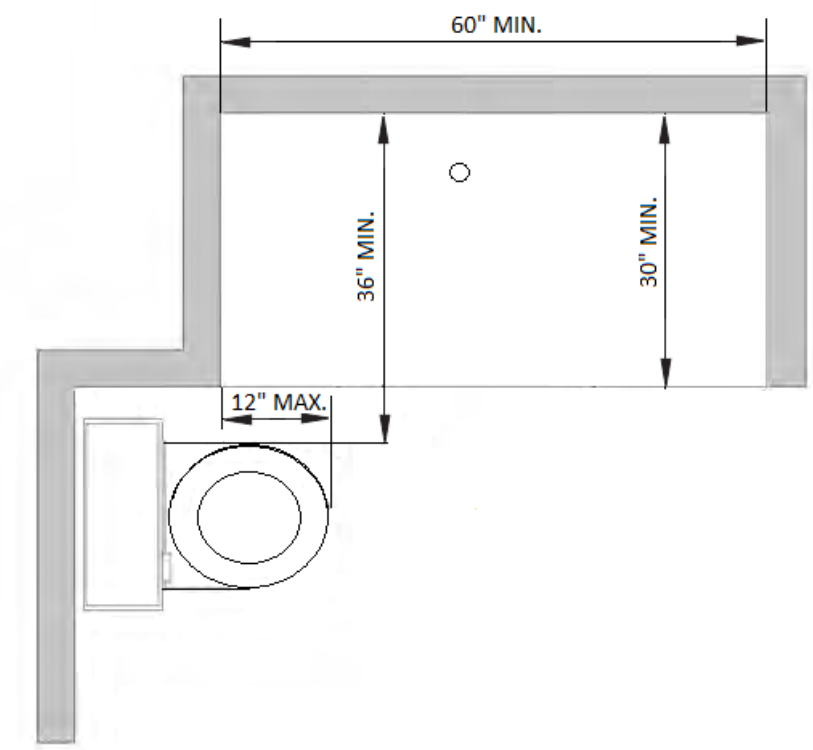


FIGURE 11A-9M—WING WALL OR CABINET AT WATER CLOSET

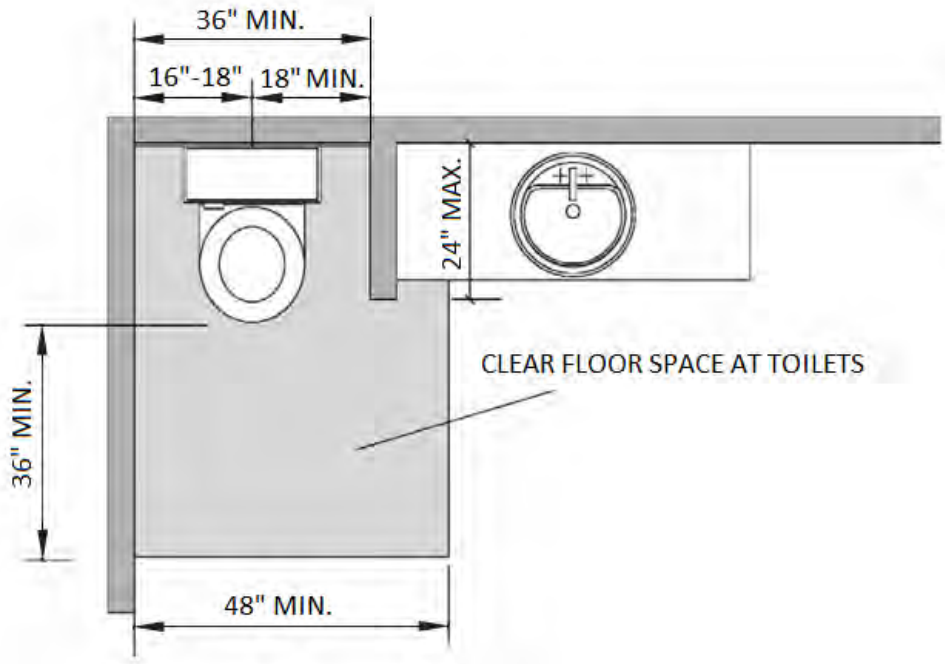
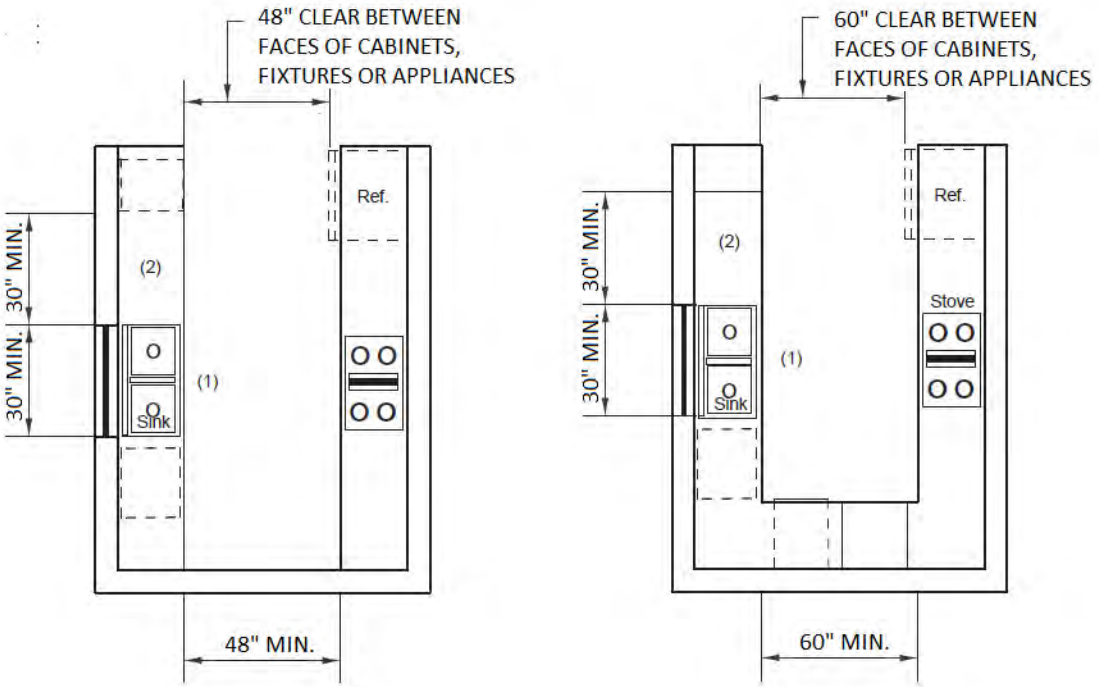


FIGURE 11A-10A—KITCHEN SPECIFICATIONS



TYPICAL KITCHEN **"U" SHAPED KITCHEN**

(1) 30-inch wide counter top space for sink installation with removable base cabinet and finish flooring beneath the sink
(2) 30-inch wide counter top workspace
(3) 30-inch by 48-inch clear space adjacent to range or cooktop to allow parallel approach
(4) 30-inch by 48-inch either parallel approach at oven, dishwasher, trash compactor or refrigerator

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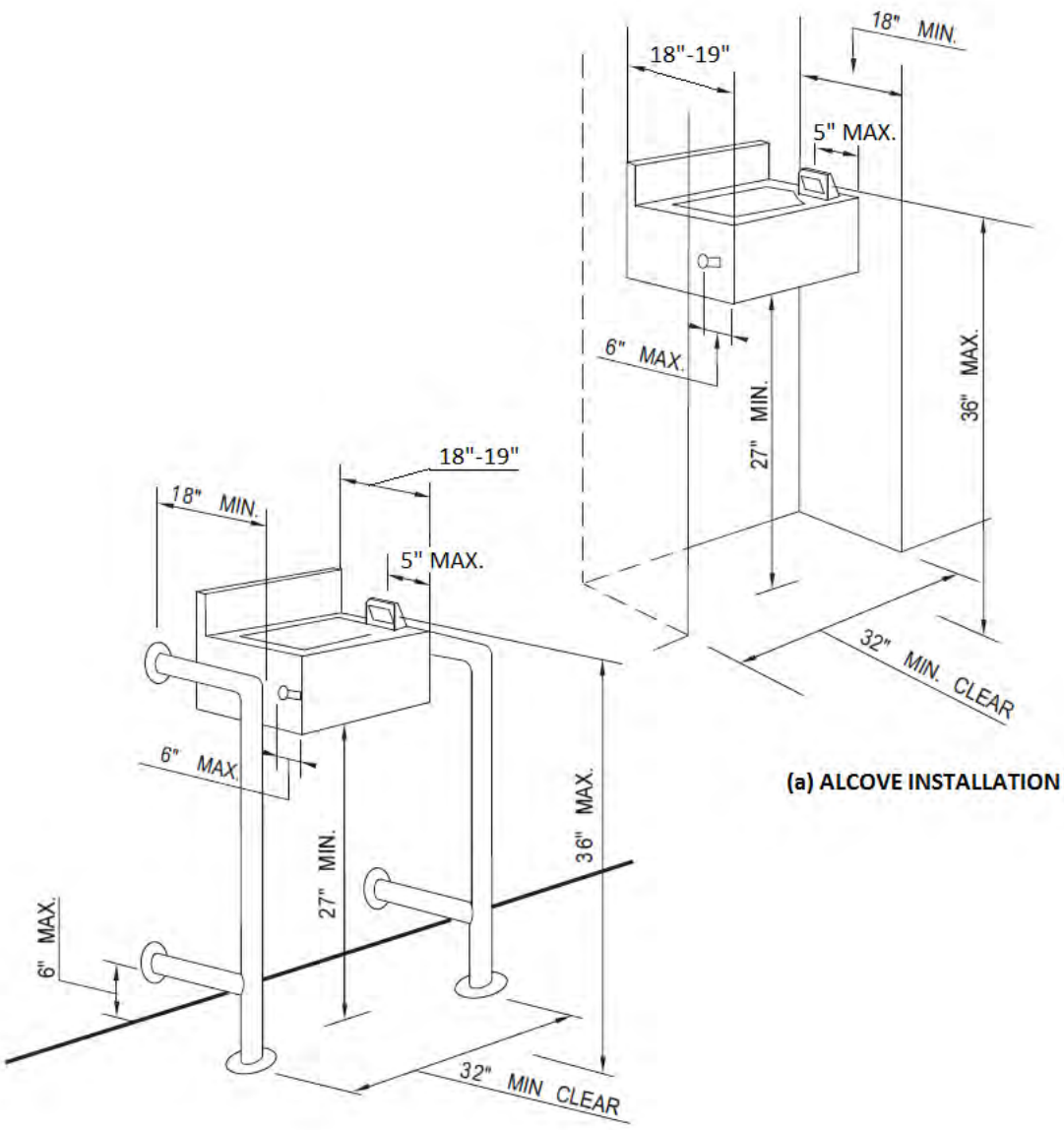
FIGURE 11A-11A—DRINKING FOUNTAINS



(a) ALCOVE INSTALLATION

(b) NONALCOVE WING WALL INSTALLATION

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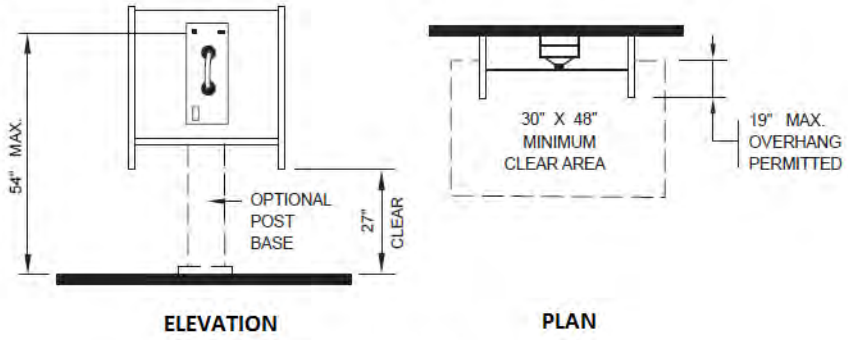
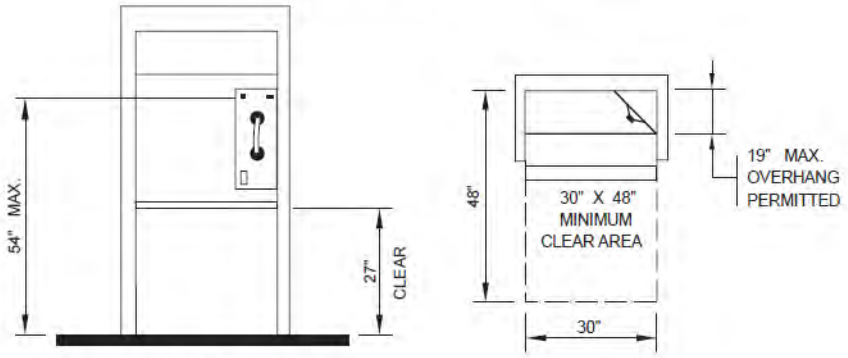
FIGURE 11A-11B—TELEPHONES



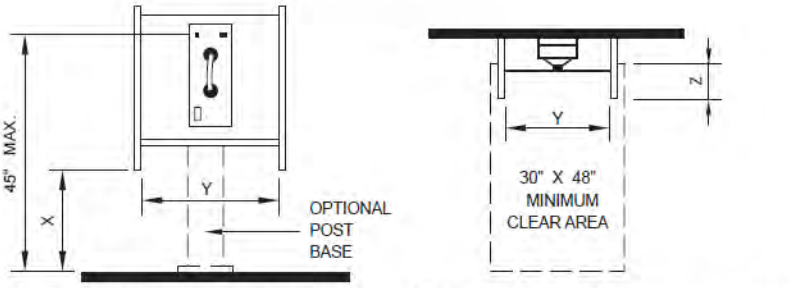
ELEVATION PLAN

(a) SIDE REACH ARANGEMENT



ELEVATION PLAN

(b) FULL HEIGHT ENCLOSURE



NOTE: IF Y IS LESS THAN 30", THEN X SHALL BE GREATER THAN 27".

NOTE: IF Z IS GREATER THAN 12", THEN Y SHALL BE GREATER THAN 30".

ELEVATION PLAN

(c) FORWARD REACH ARANGEMENT

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FIGURE 11A-11C—INTERNATIONAL TTY SYMBOL

FIGURE 11A-11D—VOLUME CONTROL TELEPHONES

FIGURE 11A-11E—INTERNATIONAL SYMBOL OF ACCESS FOR HEARING LOSS

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CALIFORNIA BUILDING CODE – MATRIX ADOPTION TABLE
CHAPTER 11B – ACCESSIBILITY TO PUBLIC BUILDINGS, PUBLIC ACCOMMODATIONS, COMMERCIAL BUILDINGS AND PUBLIC HOUSING

(Matrix Adoption Tables are nonregulatory, intended only as an aid to the code user.
See Chapter 1 for state agency authority and building applications.

Adopting agency	BSC	BSC-CG	SFM	HCD			DSA			OSHPD							BSCC	DPH	AGR	DWR	CEC	CA	SL	SLC
				1	2	1/AC	AC	SS	SS/CC	1	1R	2	3	4	5	6								
Adopt entire chapter							X																	
Adopt entire chapter as amended (amended sections listed below)																								
Adopt only those sections that are listed below																								
Chapter / Section																								

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CHAPTER

11B

ACCESSIBILITY TO PUBLIC BUILDINGS, PUBLIC ACCOMMODATIONS, COMMERCIAL BUILDINGS AND PUBLIC HOUSING

DIVISION 1: APPLICATION AND ADMINISTRATION

SECTION 11B-101—PURPOSE

***11B*-101.1 General.** This *chapter* contains scoping and technical requirements for accessibility to sites, facilities, buildings and elements by individuals with disabilities. The requirements are to be applied during the design, construction, additions to, and alteration of sites, facilities, buildings and elements to the extent required by *Chapter 1, Section 1.9.*

11B*-101.2 *Reserved.

***11B*-102 Dimensions for adults and children.** The technical requirements are based on adult dimensions and anthropometrics. In addition, this *chapter* includes technical requirements based on children's dimensions and anthropometrics for drinking fountains, water closets, toilet compartments, lavatories and sinks, dining surfaces and work surfaces.

***11B*-103 Equivalent facilitation.** Nothing in these requirements prevents the use of designs, products or technologies as alternatives to those prescribed, provided they result in substantially equivalent or greater accessibility and usability.

SECTION 11B-104—CONVENTIONS

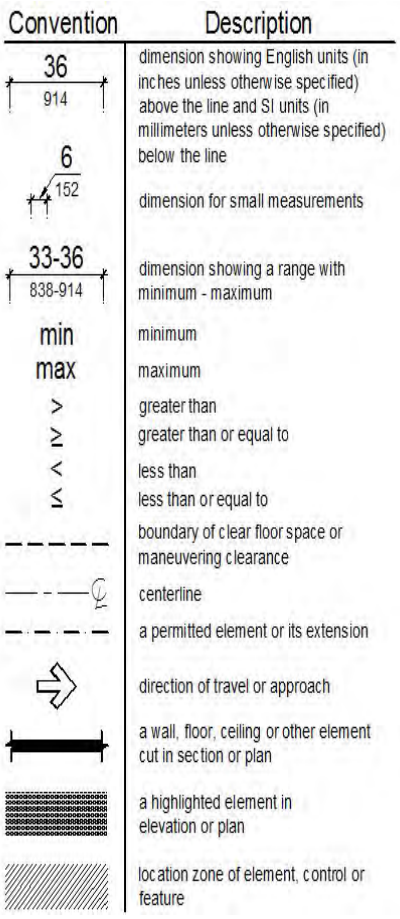
***11B*-104.1 Dimensions.** Dimensions that are not stated as "maximum" or "minimum" are absolute.

***11B*-104.1.1 Construction and manufacturing tolerances.** All dimensions are subject to conventional industry tolerances except where the requirement is stated as a range with specific minimum and maximum end points.

***11B*-104.2 Calculation of percentages.** Where the required number of elements or facilities to be provided is determined by calculations of ratios or percentages and remainders or fractions result, the next greater whole number of such elements or facilities shall be provided. Where the determination of the required size or dimension of an element or facility involves ratios or percentages, rounding down for values less than one half shall be permitted.

***11B*-104.3 Figures.** Unless specifically stated otherwise, figures are provided for informational purposes only.

FIGURE *11B*-104—GRAPHIC CONVENTION FOR FIGURES



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SECTION 11B-105—REFERENCED STANDARDS

***11B*-105.1 General.** *See Chapter 35.*

SECTION 11B-106—DEFINITIONS

***11B*-106.1 General.** For the purpose of this *chapter,* the terms *listed* in Section *11B*-106.5 *and defined in Chapter 2* have the indicated meaning.

***11B*-106.2 Terms defined in referenced standards.** Terms not *listed* in *Section 11B*-106.5 *and not defined in Chapter 2, Section 202,* but specifically defined in a referenced standard, shall have the specified meaning from the referenced standard unless otherwise stated.

***11B*-106.3 Undefined terms.** The meaning of terms not specifically *listed* in *Section 11B*-106.5, *and not defined in Chapter 2, Section 202,* or in referenced standards shall be as defined by collegiate dictionaries in the sense that the context implies.

***11B*-106.4 Interchangeability.** *See Chapter 2, Section 201.2.*

***11B*-106.5 Defined terms.** *The following terms are defined in Chapter 2, Section 202.*

ACCESS AISLE

ACCESSIBILITY

| | ***ACCESSIBILITY FUNCTION BUTTON***

ACCESSIBLE

ACCESSIBLE ELEMENT

ACCESSIBLE MEANS OF EGRESS

ACCESSIBLE ROUTE

ACCESSIBLE SPACE

ADAPTABLE

ADDITION

ADJUSTED CONSTRUCTION COST

ADMINISTRATIVE AUTHORITY

| | ***ADULT CHANGING FACILITY***

AISLE

ALTERATION

AMUSEMENT ATTRACTION

AMUSEMENT RIDE

AMUSEMENT RIDE SEAT

ANSI

APPROVED

APPROVED TESTING AGENCY

AREA OF REFUGE

AREA OF SPORT ACTIVITY

ASSEMBLY AREA

ASSISTIVE LISTENING SYSTEM (ALS)

AUTOMATIC DOOR

AUTOMATIC TELLER MACHINE (ATM)

BATHROOM

BLENDED TRANSITION

BOARDING PIER

BOAT LAUNCH RAMP

BOAT SLIP

| | ***BOTTLE FILLING STATION***

BUILDING

BUILDING OFFICIAL

CATCH POOL

CCR

CHARACTERS

CHILDREN'S USE

CIRCULATION PATH

CLEAR

CLEAR FLOOR SPACE
CLOSED-CIRCUIT TELEPHONE
COMMERCIAL FACILITIES
COMMERCIAL PLACE OF PUBLIC AMUSEMENT
COMMON USE
COMPLY WITH
CROSS SLOPE
CURB CUT
CURB RAMP
DESIGNATED PUBLIC TRANSPORTATION
DESIGNATED-ORIENTED ELEVATOR
DETECTABLE WARNING
DIRECTIONAL SIGN
DISABILITY
DISTRICT AGRICULTURAL ASSOCIATIONS
DORMITORY
DRIVE AISLE
DRIVE-UP ELECTRIC VEHICLE CHARGING STATION
DRIVEWAY
ELECTRIC VEHICLE (EV)
ELECTRIC VEHICLE (EV) CHARGER
ELECTRIC VEHICLE CHARGING SPACE (EV SPACE)
ELECTRIC VEHICLE CHARGING STATION (EVCS)
ELECTRIC VEHICLE (EV) CONNECTOR
ELEMENT
ELEVATED PLAY COMPONENT
ELEVATOR, PASSENGER
EMPLOYEE WORK AREA
ENFORCING AGENCY
ENTRANCE
EQUIVALENT FACILITATION
EXISTING BUILDING OR FACILITY
EXIT
FACILITY
FUNCTIONAL AREA
GANGWAY
GOLF CAR PASSAGE
GRAB BAR
GRADE (ADJACENT GROUND ELEVATION)
GRADE BREAK
GROUND FLOOR
GROUND LEVEL PLAY COMPONENT
GUARD
HALL CALL CONSOLE
HANDRAIL
HEALTH CARE PROVIDER
HISTORIC BUILDINGS
HOUSING AT A PLACE OF EDUCATION
IF, IF . . . THEN
INTERNATIONAL SYMBOL OF ACCESSIBILITY
KEY STATION
KICK PLATE
KITCHEN OR KITCHENETTE

LAVATORY
MAIL BOXES
MARKED CROSSING
MAY
MEZZANINE
MULTI-BEDROOM HOUSING UNIT
NFPA
NOSING
OCCUPANT LOAD
OCCUPIABLE SPACE
OPEN RISER
OPERABLE PART
PASSENGER ELEVATOR
PATH OF TRAVEL
PEDESTRIAN
PEDESTRIAN WAY
PERMANENT
PERMIT
PICTOGRAM
PLACE OF PUBLIC ACCOMMODATION
PLATFORM
PLATFORM (WHEELCHAIR) LIFT
PLAY AREA
PLAY COMPONENT
POINT-OF-SALE DEVICE
POWDER ROOM
POWER-ASSISTED DOOR
PRIVATE BUILDING OR FACILITY
PROFESSIONAL OFFICE OF A HEALTH CARE PROVIDER
PUBLIC BUILDING OR FACILITY
PUBLIC ENTITY
PUBLIC ENTRANCE
PUBLIC HOUSING
PUBLIC USE
PUBLIC-USE AREAS
PUBLIC WAY
QUALIFIED HISTORIC BUILDING OR FACILITY
RAMP
REASONABLE PORTION
RECOMMEND
REMODELING
REPAIR
RESIDENTIAL DWELLING UNIT
RESTRICTED ENTRANCE
RISER
RUNNING SLOPE
SELF-SERVICE STORAGE
SERVICE ENTRANCE
SHALL
SHOPPING CENTER (OR SHOPPING MALL)
SHOULD
SIDEWALK
SIGN

SINK
SITE
SLEEPING ACCOMMODATIONS
SOFT CONTAINED PLAY STRUCTURE
SPACE
SPECIFIED PUBLIC TRANSPORTATION
STAGE
STAIR
STAIRWAY
STORY
STRUCTURAL FRAME
STRUCTURE
TACTILE
TACTILE SIGN
TECHNICALLY INFEASIBLE
TEEING GROUND
TEMPORARY
TEXT TELEPHONE
TRANSFER DEVICE
TRANSIENT LODGING
TRANSIT BOARDING PLATFORM
TRANSITION PLATE
TTY
UNREASONABLE HARDSHIP
USE ZONE
VALUATION THRESHOLD
VARIABLE MESSAGE SIGN (VMS)
VARIABLE MESSAGE SIGN (VMS) CHARACTERS
VEHICULAR WAY
WALK
WET BAR
WHEELCHAIR
WHEELCHAIR SPACE
WORKSTATION
WORK AREA EQUIPMENT

11B-107 Special conditions appeals action. *See Chapter 1, Section 1.9.1.5.*

11B-108 Maintenance of accessible features. *Features, facilities and equipment required by Chapter 11B to be accessible to and useable by persons with disabilities shall be maintained in operable working condition. Isolated or temporary interruptions in service or accessibility due to maintenance or repairs shall be permitted.*

DIVISION 2: SCOPING REQUIREMENTS

SECTION 11B-201—APPLICATION

***11B*-201.1 Scope.** All areas of newly designed and newly constructed buildings and facilities and altered portions of existing buildings and facilities shall comply with these requirements.

***11B*-201.2 Application based on building or facility use.** Where a site, building, facility, room or space contains more than one use, each portion shall comply with the applicable requirements for that use.

***11B*-201.3 Temporary and permanent structures.** These requirements shall apply to temporary and permanent buildings and facilities.

11B-201.4 Construction support facilities. *These requirements shall apply to temporary or permanent construction support facilities for uses and activities not directly associated with the actual processes of construction, including but not limited to offices, meeting rooms, plan rooms, other administrative or support functions. When provided, toilet and bathing facilities serving construction support facilities shall comply with Section 11B-213. When toilet and bathing facilities serving construction support facilities are provided by portable units, at least one of each type shall be accessible and connected to the construction support facilities it serves by an accessible route.*

Exception: *During construction an accessible route shall not be required between site arrival points or the boundary of the area of construction and the entrance to the construction support facilities if the only means of access between them is a vehicular way not providing pedestrian access.*

SECTION 11B-202—EXISTING BUILDINGS AND FACILITIES

***11B*-202.1 General.** Additions and alterations to existing buildings or facilities shall comply with *Section 11B*-202.

***11B*-202.2 Additions.** Each addition to an existing building or facility shall comply with the requirements for new construction *and* shall comply with *Section 11B-202.4.*

***11B*-202.3 Alterations.** Where existing elements or spaces are altered, each altered element or space shall comply with the applicable requirements of *Division 2, including Section 11B-202.4.*

Exceptions:

1. ***Reserved.***
2. ***Technically infeasible.*** In alterations, where *the enforcing authority determines* compliance with applicable requirements is technically infeasible, the alteration shall *provide equivalent facilitation or* comply with the requirements to the maximum extent feasible. *The details of the finding that full compliance with the requirements is technically infeasible shall be recorded and entered into the files of the enforcing agency.*
3. Residential dwelling units not required to be accessible in compliance with *this code* shall not be required to comply with *Section 11B*-202.3.

***11B*-202.3.1 Prohibited reduction in access.** An alteration that decreases or has the effect of decreasing the accessibility of a building or facility below the requirements for new construction at the time of the alteration is prohibited.

***11B*-202.3.2 Extent of application.** An alteration of an existing element, space or area of a building or facility shall not impose a requirement for accessibility greater than required for new construction.

11B-202.3.3 Alteration of single elements. *If alterations of single elements, when considered together, amount to an alteration of a room or space in a building or facility, the entire room or space shall be made accessible.*

11B*-202.4 *Path of travel requirements in alterations, additions and structural repairs. *When alterations or additions are made to existing buildings or facilities, an accessible path of travel to the specific area of alteration or addition shall be provided. The primary accessible path of travel shall include:*

1. *A primary entrance to the building or facility,*
2. *Toilet and bathing facilities serving the area,*
3. *Drinking fountains serving the area,*
4. *Public telephones serving the area, and*
5. *Signs.*

Exceptions:

1. Residential dwelling units shall comply with *Section 11B-233.3.4.2.*
2. *If the following elements of a path of travel have been constructed or altered in compliance with the accessibility requirements of the immediately preceding edition of the California Building Code, it shall not be required to retrofit such elements to reflect the incremental changes in this code solely because of an alteration to an area served by those elements of the path of travel:*
    1. *A primary entrance to the building or facility,*
    2. *Toilet and bathing facilities serving the area,*
    3. *Drinking fountains serving the area,*
    4. *Public telephones serving the area, and*

5. *Signs.*

Note: *The language in this exception, which refers to the "immediately preceding edition of the California Building Code," shall permit a reference back to one CBC edition only and is not accumulative to prior editions.*

3. *Additions or alterations to meet accessibility requirements consisting of one or more of the following items shall be limited to the actual scope of work of the project and shall not be required to comply with Section 11B-202.4:*
    1. *Altering one building entrance.*
    2. *Altering one existing toilet facility.*
    3. *Altering existing elevators.*
    4. *Altering existing steps.*
    5. *Altering existing handrails.*
4. *Alterations solely for the purpose of barrier removal undertaken pursuant to the requirements of the Americans with Disabilities Act (Public Law 101-336, 28 C.F.R., Section 36.304) or the accessibility requirements of this code as those requirements or regulations now exist or are hereafter amended including, but not limited to, one or more of the following items shall be limited to the actual scope of work of the project and shall not be required to comply with Section 11B-202.4:*
    1. *Installing ramps.*
    2. *Making curb cuts in sidewalks and entrance.*
    3. *Repositioning shelves.*
    4. *Rearranging tables, chairs, vending machines, display racks and other furniture.*
    5. *Repositioning telephones.*
    6. *Adding raised markings on elevator control buttons.*
    7. *Installing flashing alarm lights.*
    8. *Widening doors.*
    9. *Installing offset hinges to widen doorways.*
    10. *Eliminating a turnstile or providing an alternative accessible route.*
    11. *Installing accessible door hardware.*
    12. *Installing grab bars in toilet stalls.*
    13. *Rearranging toilet partitions to increase maneuvering space.*
    14. *Insulating lavatory pipes under sinks to prevent burns.*
    15. *Installing a raised toilet seat.*
    16. *Installing a full-length bathroom mirror.*
    17. *Repositioning the paper towel dispenser in a bathroom.*
    18. *Creating designated accessible parking spaces.*
    19. *Removing high-pile, low-density carpeting.*
5. *Alterations of existing parking lots by resurfacing and/or restriping shall be limited to the actual scope of work of the project and shall not be required to comply with Section 11B-202.4.*
6. *The addition or replacement of signs and/or identification devices shall be limited to the actual scope of work of the project and shall not be required to comply with Section 11B-202.4.*
7. *Projects consisting only of heating, ventilation, air conditioning, reroofing, electrical work not involving placement of switches and receptacles, cosmetic work that does not affect items regulated by this code, such as painting, equipment not considered to be a part of the architecture of the building or area, such as computer terminals and office equipment shall not be required to comply with Section 11B-202.4 unless they affect the usability of the building or facility.*
8. *When the adjusted construction cost, as defined, is less than or equal to the current valuation threshold, as defined, the cost of compliance with Section 11B-202.4 shall be limited to 20 percent of the adjusted construction cost of alterations, structural repairs or additions. When the cost of full compliance with Section 11B-202.4 would exceed 20 percent, compliance shall be provided to the greatest extent possible without exceeding 20 percent.*

    When the adjusted construction cost, as defined, exceeds the current valuation threshold, as defined, and the enforcing agency determines the cost of compliance with Section 11B-202.4 is an unreasonable hardship, as defined, full compliance with Section 11B-202.4 shall not be required. Compliance shall be provided by equivalent facilitation or to the greatest extent possible without creating an unreasonable hardship; but in no case shall the cost of compliance be less than 20 percent of the adjusted construction cost of alterations, structural repairs or additions. The details of the finding of unreasonable hardship shall be recorded and entered into the files of the enforcing agency and shall be subject to Chapter 1, Section 1.9.1.5, Special Conditions for Persons with Disabilities Requiring Appeals Action Ratification.

    For the purposes of this exception, the adjusted construction cost of alterations, structural repairs or additions shall not include the cost of alterations to path of travel elements required to comply with Section 11B-202.4.

    In choosing which accessible elements to provide, priority should be given to those elements that will provide the greatest access in the following order:

    1. *An accessible entrance;*

2. *An accessible route to the altered area;*
3. *At least one accessible restroom for each sex or one accessible unisex (single-user or family) restroom;*
4. *Accessible telephones;*
5. *Accessible drinking fountains; and*
6. *When possible, additional accessible elements such as parking, signs, storage and alarms.*

If an area has been altered without providing an accessible path of travel to that area, and subsequent alterations of that area or a different area on the same path of travel are undertaken within three years of the original alteration, the total cost of alterations to the areas on that path of travel during the preceding three-year period shall be considered in determining whether the cost of making that path of travel accessible is disproportionate.

9. *Certain types of privately funded, multistory buildings and facilities were formerly exempt from accessibility requirements above and below the first floor under this code, but as of April 1, 1994 are no longer exempt due to more restrictive provisions in the federal Americans with Disabilities Act. In alteration projects involving buildings and facilities previously approved and built without elevators, areas above and below the ground floor are subject to the 20-percent disproportionality provisions described in Exception 8, above, even if the value of the project exceeds the valuation threshold in Exception 8. The types of buildings and facilities are:*
    1. *Office buildings and passenger vehicle service stations of three stories or more and 3,000 or more square feet (279 m^2) per floor.*
    2. *Offices of physicians and surgeons.*
    3. *Shopping centers.*
    4. *Other buildings and facilities three stories or more and 3,000 or more square feet (279 m^2) per floor if a reasonable portion of services sought and used by the public is available on the accessible level.*

    For the general privately funded multistory building exception applicable to new construction and alterations, see Section 11B-206.2.3, Exception 1.

    The elevator exception set forth in this section does not obviate or limit in any way the obligation to comply with the other accessibility requirements in this code. For example, floors above or below the accessible ground floor must meet the requirements of this section except for elevator service. If toilet or bathing facilities are provided on a level not served by an elevator, then toilet or bathing facilities must be provided on the accessible ground floor.
10. *Alterations solely for the purpose of installing electric vehicle charging stations (EVCS) at facilities where vehicle fueling, recharging, parking or storage is a primary function shall comply with Section 11B-202.4 to the maximum extent feasible without exceeding 20 percent of the cost of the work directly associated with the installation of EVCS. A "primary function" is a major activity for which the facility is intended.*

    Alterations solely for the purpose of installing EVCS at facilities where vehicle fueling, recharging, parking or storage is not a primary function shall not be required to comply with Section 11B-202.4

***11B*-202.5 Alterations to qualified historic buildings and facilities.** Alterations to a qualified historic building or facility shall comply with *the State Historical Building Code, Part 8, Title 24, of the California Code of Regulations.*

Exception: ***Reserved.***

SECTION 11B-203—GENERAL EXCEPTIONS

***11B*-203.1 General.** Sites, buildings, facilities and elements are exempt from these requirements to the extent specified by *11B*-203.

***11B*-203.2 Construction sites.** Structures and sites directly associated with the actual processes of construction, including but not limited to, scaffolding, bridging, materials hoists, materials storage and construction trailers shall not be required to comply with these requirements or to be on an accessible route. Portable toilet units provided for use exclusively by construction personnel on a construction site shall not be required to comply with *Section 11B*-213 or to be on an accessible route.

***11B*-203.3 Raised areas.** Areas raised primarily for purposes of security, life safety or fire safety, including but not limited to observation or lookout galleries, prison guard towers, fire towers or life guard stands, shall not be required to comply with these requirements or to be on an accessible route.

***11B*-203.4 Limited access spaces.** Spaces *not customarily occupied and* accessed only by ladders, catwalks, crawl spaces or very narrow passageways shall not be required to comply with these requirements or to be on an accessible route.

***11B*-203.5 Machinery spaces.** Spaces frequented only by service personnel for maintenance, repair or occasional monitoring of equipment shall not be required to comply with these requirements or to be on an accessible route. Machinery spaces include, but are not limited to, elevator pits or elevator penthouses; mechanical, electrical or communications equipment rooms; piping or equipment catwalks; water or sewage treatment pump rooms and stations; electric substations and transformer vaults; and highway and tunnel utility facilities.

***11B*-203.6 Single occupant structures.** Single occupant structures accessed only by passageways below grade or elevated above standard curb height, including but not limited to, toll booths that are accessed only by underground tunnels, shall not be required to comply with these requirements or to be on an accessible route.

***11B*-203.7 Detention and correctional facilities.** In detention and correctional facilities, common use areas that are used only by inmates or detainees and security personnel and that do not serve holding cells or housing cells required to comply with *Section 11B*-232, shall not be required to comply with these requirements or to be on an accessible route.

***11B*-203.8 Residential facilities.** In residential facilities, common use areas that do not serve residential dwelling units required to provide mobility features complying with *Sections 11B*-809.2 through *11B*-809.4 *or adaptable features complying with Sections 11B-809.6 through 11B-809.12* shall not be required to comply with these requirements or to be on an accessible route.

11B*-203.9 Employee *workstations. *Employee workstations shall be on an accessible route complying with Division 4. Spaces and elements within employee workstations shall only be required to comply with Sections 11B-207.1, 11B-215.3, 11B-302, 11B-303, 11B-308.1.1, 11B-308.1.2 and 11B-404.2.3 unless exempted by other parts of this code. Common use circulation paths within employee workstations shall comply with Section 11B-206.2.8.*

Exception: *Receptacles, controls and switches that are an integral part of workstation furnishings, fixtures and equipment shall not be required to comply with Sections 11B-308.1.1 and 11B-308.1.2.*

***11B*-203.10 Raised refereeing, judging and scoring areas.** Raised structures used solely for refereeing, judging or scoring a sport shall not be required to comply with these requirements or to be on an accessible route. *An accessible route complying with Division 4 shall be provided to the ground- or floor-level entry points, where provided, of stairs, ladders or other means of reaching the raised elements or areas.*

***11B*-203.11 Water slides.** Water slides shall not be required to comply with these requirements or to be on an accessible route. *An accessible route complying with Division 4 shall be provided to the ground- or floor-level entry points, where provided, of stairs, ladders or other means of reaching the raised elements or areas.*

***11B*-203.12 Animal containment areas.** Animal containment areas that are not for public use shall not be required to comply with these requirements or to be on an accessible route. *Animal containment areas for public use shall be on an accessible route.*

***11B*-203.13 Raised boxing or wrestling rings.** Raised boxing or wrestling rings shall not be required to comply with these requirements or to be on an accessible route. *An accessible route complying with Division 4 shall be provided to the ground- or floor-level entry points, where provided, of stairs, ladders or other means of reaching the raised elements or areas.*

***11B*-203.14 Raised diving boards and diving platforms.** Raised diving boards and diving platforms shall not be required to comply with these requirements or to be on an accessible route. *An accessible route complying with Division 4 shall be provided to the ground- or floor-level entry points, where provided, of stairs, ladders or other means of reaching the raised elements or areas.*

SECTION 11B-204—PROTRUDING OBJECTS

***11B*-204.1 General.** Protruding objects on circulation paths shall comply with *Section 11B*-307.

Exceptions:

1. Within areas of sport activity, protruding objects on circulation paths shall not be required to comply with *Section 11B*-307.
2. Within play areas, protruding objects on circulation paths shall not be required to comply with *Section 11B*-307 provided that ground level accessible routes provide vertical clearance in compliance with *Section 11B*-1008.2.

SECTION 11B-205—OPERABLE PARTS

***11B*-205.1 General.** Operable parts on accessible elements, accessible routes, and in accessible rooms and spaces shall comply with *Section 11B*-309.

Exceptions:

1. Operable parts that are intended for use only by service or maintenance personnel shall not be required to comply with *Section 11B*-309.
2. Electrical or communication receptacles serving a dedicated use shall not be required to comply with *Section 11B*-309.
3. ***Reserved.***
4. Floor electrical receptacles shall not be required to comply with *Section 11B*-309.
5. HVAC diffusers shall not be required to comply with *Section 11B*-309.
6. Except for light switches, where redundant controls are provided for a single element, one control in each space shall not be required to comply with *Section 11B*-309.
7. Cleats and other boat securement devices shall not be required to comply with *Section 11B*-309.3.
8. Exercise machines and exercise equipment shall not be required to comply with *Section 11B*-309.
9. *In residential dwelling units with mobility features where receptacles are provided in a kitchen at a corner work surface, one receptacle shall be located 36 inches (915 mm) from either wall at the inside corner.*

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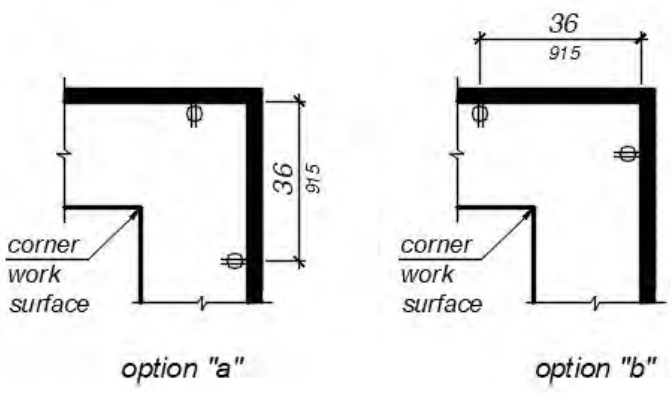
FIGURE 11B-205.1 Ex. 9—ELECTRICAL RECEPTACLES AT CORNER WORKSURFACES



SECTION 11B-206—ACCESSIBLE ROUTES

***11B*-206.1 General.** Accessible routes shall be provided in accordance with *Section 11B*-206 and shall comply with *Division* 4.

***11B*-206.2 Where required.** Accessible routes shall be provided where required by *Section 11B*-206.2.

***11B*-206.2.1 Site arrival points.** At least one accessible route shall be provided within the site from accessible parking spaces and accessible passenger *drop-off and* loading zones; public streets and sidewalks; and public transportation stops to the accessible building or facility entrance they serve. *Where more than one route is provided, all routes must be accessible.*

Exceptions:

1. *Reserved.*
2. An accessible route shall not be required between site arrival points and the building or facility entrance if the only means of access between them is a vehicular way not providing pedestrian access.
3. *General circulation paths shall be permitted when located in close proximity to an accessible route.*

***11B*-206.2.2 Within a site.** At least one accessible route shall connect accessible buildings, accessible facilities, accessible elements and accessible spaces that are on the same site.

Exception: An accessible route shall not be required between accessible buildings, accessible facilities, accessible elements and accessible spaces if the only means of access between them is a vehicular way not providing pedestrian access.

***11B*-206.2.3 Multistory buildings and facilities.** At least one accessible route shall connect each story and mezzanine in multi-story buildings and facilities.

Exceptions:

1. *The following types of privately funded multi-story buildings do not require a ramp or elevator above and below the first floor:*
   - 1.1. *Multistoried office buildings (other than the professional office of a health care provider) and passenger vehicle service stations less than three stories high or less than 3,000 square feet (279 m^2) per story.*
   - 1.2. *Any other privately funded multistoried building that is not a shopping center, shopping mall or the professional office of a health care provider or a terminal, depot or other station used for specified public transportation or an airport passenger terminal and that is less than three stories high or less than 3,000 square feet (279 m^2) per story if a reasonable portion of all facilities and accommodations normally sought and used by the public in such a building are accessible to and usable by persons with disabilities.*
2. ***Reserved.***
3. In detention and correctional facilities, an accessible route shall not be required to connect stories where cells with mobility features required to comply with *Section 11B*-807.2, all common use areas serving cells with mobility features required to comply with *Section 11B*-807.2, and all public use areas are on an accessible route.
4. In residential facilities, an accessible route shall not be required to connect stories where residential dwelling units with mobility features required to comply with *Sections 11B*-809.2 through *11B*-809.4, *residential dwelling units with adaptable features complying with Sections 11B-809.6 through 11B-809.12,* all common use areas serving residential dwelling units with mobility features required to comply with *Sections 11B*-809.2 through *11B*-809.4, *all common use areas serving residential dwelling units with adaptable features complying* with *Sections 11B*-809.6 through *11B*-809.12, and public use areas serving residential dwelling units are on an accessible route.
5. Within multistory transient lodging guest rooms with mobility features required to comply with *Section 11B*-806.2, an accessible route shall not be required to connect stories provided that spaces complying with *Section 11B*-806.2 are on an accessible route and sleeping accommodations for two persons minimum are provided on a story served by an accessible route.

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6. In air traffic control towers, an accessible route shall not be required to serve the cab and *the equipment areas on* the floor immediately below the cab.
7. ***Reserved.***

***11B*-206.2.3.1 Stairs and escalators in existing buildings.** In alterations and additions, where an escalator or stair is provided where none existed previously and major structural modifications are necessary for the installation, an accessible route shall be provided between the levels served by the escalator or stair unless exempted by *Section 11B*-206.2.3 Exceptions 1 through 7.

11B-206.2.3.2 Distance to elevators. *In new construction of buildings where elevators are required by Section 11B-206.2.3, and which exceed 10,000 square feet (929 m^2) on any floor, an accessible means of vertical access via ramp, elevator or lift shall be provided within 200 feet (60,960 mm) of travel of each stair and each escalator. In existing buildings that exceed 10,000 square feet (929 m^2) on any floor and in which elevators are required by Section 11B-206.2.3, whenever a newly constructed means of vertical access is provided via stairs or an escalator, an accessible means of vertical access via ramp, elevator or lift shall be provided within 200 feet (60,960 mm) of travel of each new stair or escalator.*

Exception: *Stairs used solely for emergency egress.*

***11B*-206.2.4 Spaces and elements.** At least one accessible route shall connect accessible building or facility entrances with all accessible spaces and elements within the building or facility, *including mezzanines,* which are otherwise connected by a circulation path unless exempted by *Section 11B*-206.2.3 Exceptions 1 through 7.

Exceptions:

1. ***Reserved.***
2. In assembly areas with fixed seating required to comply with *Section 11B*-221, an accessible route shall not be required to serve fixed seating where wheelchair spaces required to be on an accessible route are not provided.
3. ***Reserved.***

11B*-206.2.5 *Restaurants, cafeterias, banquet facilities and bars. In *restaurants, cafeterias, banquet facilities, bars and similar facilities,* an accessible route shall be provided to all *functional* areas, including raised or sunken areas, and outdoor areas.

Exceptions:

1. In *alterations of* buildings or facilities not required to provide an accessible route between stories, an accessible route shall not be required to a mezzanine dining area where the mezzanine contains less than 25 percent of the total combined area for seating and dining and where the same decor and services are provided in the accessible area.
2. ***Reserved.***
3. In sports facilities, tiered dining areas providing seating required to comply with *Section 11B*-221 shall be required to have accessible routes serving at least 25 percent of the dining area provided that accessible routes serve seating complying with *Section 11B*-221 and each tier is provided with the same services.

***11B*-206.2.6 Performance areas.** Where a circulation path directly connects a performance area to an assembly seating area, an accessible route shall directly connect the assembly seating area with the performance area. An accessible route shall be provided from performance areas to ancillary areas or facilities used by performers unless exempted by *Section 11B*-206.2.3 Exceptions 1 through 7.

***11B*-206.2.7 Press boxes.** Press boxes in assembly areas shall be on an accessible route.

Exceptions:

1. An accessible route shall not be required to press boxes in bleachers that have points of entry at only one level provided that the aggregate area of all press boxes is 500 square feet (46 m^2) maximum.
2. An accessible route shall not be required to free-standing press boxes that are elevated above grade 12 feet (3660 mm) minimum provided that the aggregate area of all press boxes is 500 square feet (46 m^2) maximum.

***11B*-206.2.8 Employee work areas.** Common use circulation paths within employee work areas shall comply with *Section 11B*-402.

Exceptions:

1. ***Reserved.***
2. Common use circulation paths located within employee work areas that are an integral component of work area equipment shall not be required to comply with *Section 11B*-402.
3. Common use circulation paths located within exterior employee work areas that are fully exposed to the weather shall not be required to comply with *Section 11B*-402.

***11B*-206.2.9 Amusement rides.** Amusement rides required to comply with *Section 11B*-234 shall provide accessible routes in accordance with *Section 11B*-206.2.9. Accessible routes serving amusement rides shall comply with *Division* 4 except as modified by *Section 11B*-1002.2.

***11B*-206.2.9.1 Load and unload areas.** Load and unload areas shall be on an accessible route. Where load and unload areas have more than one loading or unloading position, at least one loading and unloading position shall be on an accessible route.

***11B*-206.2.9.2 Wheelchair spaces, ride seats designed for transfer, and transfer devices.** When amusement rides are in the load and unload position, wheelchair spaces complying with *Section 11B*-1002.4, amusement ride seats designed for transfer complying with *Section 11B*-1002.5, and transfer devices complying with *Section 11B*-1002.6 shall be on an accessible route.

***11B*-206.2.10 Recreational boating facilities.** Boat slips required to comply with *Section 11B*-235.2 and boarding piers at boat launch ramps required to comply with *Section 11B*-235.3 shall be on an accessible route. Accessible routes serving recreational boating facilities shall comply with *Division 4,* except as modified by *Section 11B*-1003.2.

***11B*-206.2.11 Bowling lanes.** Where bowling lanes are provided, at least 5 percent, but no fewer than one of each type of bowling lane, shall be on an accessible route.

***11B*-206.2.12 Court sports.** In court sports, at least one accessible route shall directly connect both sides of the court.

***11B*-206.2.13 Exercise machines and equipment.** Exercise machines and equipment required to comply with *Section 11B*-236 shall be on an accessible route.

***11B*-206.2.14 Fishing piers and platforms.** Fishing piers and platforms shall be on an accessible route. Accessible routes serving fishing piers and platforms shall comply with *Division 4* except as modified by *Section 11B*-1005.1.

***11B*-206.2.15 Golf facilities.** At least one accessible route shall connect accessible elements and spaces within the boundary of the golf course. In addition, accessible routes serving golf car rental areas; bag drop areas; course weather shelters complying with *Section 11B*-238.2.3; course toilet rooms; and practice putting greens, practice teeing grounds and teeing stations at driving ranges complying with *Section 11B*-238.3 shall comply with *Division* 4 except as modified by *Section 11B*-1006.2.

Exception: Golf car passages complying with *Section 11B*-1006.3 shall be permitted to be used for all or part of accessible routes required by *Section 11B*-206.2.15.

***11B*-206.2.16 Miniature golf facilities.** Holes required to comply with *Section 11B*-239.2, including the start of play, shall be on an accessible route. Accessible routes serving miniature golf facilities shall comply with *Division* 4 except as modified by *Section 11B*-1007.2.

***11B*-206.2.17 Play areas.** Play areas shall provide accessible routes in accordance with *Section 11B*-206.2.17. Accessible routes serving play areas shall comply with *Division* 4 except as modified by *Section 11B*-1008.2.

***11B*-206.2.17.1 Ground level and elevated play components.** At least one accessible route shall be provided within the play area. The accessible route shall connect ground level play components required to comply with *Section 11B*-240.2.1 and elevated play components required to comply with *Section 11B*-240.2.2, including entry and exit points of the play components.

***11B*-206.2.17.2 Soft contained play structures.** Where three or fewer entry points are provided for soft contained play structures, at least one entry point shall be on an accessible route. Where four or more entry points are provided for soft contained play structures, at least two entry points shall be on an accessible route.

11B-206.2.18 Area of sport activity. *An accessible route shall be provided to the boundary of each area of sport activity.*

11B-206.2.19 Pedestrian street crossings. *Where walks or sidewalks are provided, a curb ramp, blended transition or a combination of curb ramps and blended transitions complying with Section 11B-406 shall connect the walks or sidewalks at each pedestrian street crossing. The curb ramp (excluding any flared sides) or blended transition shall be contained wholly within the width of the pedestrian street crossing served.*

Exception: *Compliance with Section 11B-206.2.19 shall not be required where pedestrian crossing is prohibited by the appropriate administrative authority.*

***11B*-206.3 Location.** Accessible routes shall coincide with or be located in the same area as general circulation paths. Where circulation paths are interior, required accessible routes shall also be interior. *An accessible route shall not pass through kitchens, storage rooms, restrooms, closets or other spaces used for similar purposes, except as permitted by Chapter 10.*

***11B*-206.4 Entrances.** Entrances shall be provided in accordance with *Section 11B*-206.4. Entrance doors, doorways and gates shall comply with *Section 11B*-404 and shall be on an accessible route complying with *Section 11B*-402.

Exceptions:

1. ***Reserved.***
2. ***Reserved.***

***11B*-206.4.1 Entrances.** *All* entrances shall comply with *Section 11B*-404.

***11B*-206.4.2 Parking structure entrances.** Where direct access is provided for pedestrians from a parking structure to a building or facility entrance, each direct access to the building or facility entrance shall comply with *Section 11B*-404.

***11B*-206.4.3 Entrances from tunnels or elevated walkways.** Where direct access is provided for pedestrians from a pedestrian tunnel or elevated walkway to a building or facility, *all entrances* to the building or facility from each tunnel or walkway shall comply with *Section 11B*-404.

***11B*-206.4.4 Transportation facilities.** In addition to the requirements of *Sections 11B*-206.4.2, *11B*-206.4.3 and *11B*-206.4.5 through *11B*-206.4.9, transportation facilities shall provide entrances in accordance with *Section 11B*-206.4.4.

***11B*-206.4.4.1 Location.** In transportation facilities, where different entrances serve different transportation fixed routes or groups of fixed routes, *entrances* serving each fixed route or group of fixed routes shall comply with *Section 11B*-404.

Exception: Entrances to key stations and existing intercity rail stations retrofitted in accordance with 49 CFR 37.49 or 49 CFR 37.51 shall not be required to comply with *Section 11B*-206.4.4.1.

***11B*-206.4.4.2 Direct connections.** Direct connections to other facilities shall provide an accessible route complying with *Section 11B*-404 from the point of connection to boarding platforms and all transportation system elements required to be accessible. Any elements provided to facilitate future direct connections shall be on an accessible route connecting boarding platforms and all transportation system elements required to be accessible.

Exception: In key stations and existing intercity rail stations, existing direct connections shall not be required to comply with *Section 11B*-404.

***11B*-206.4.4.3 Key stations and intercity rail stations.** Key stations and existing intercity rail stations required by Subpart C of 49 CFR part 37 to be altered, shall have *entrances* complying with *Section 11B*-404.

***11B*-206.4.5 Tenant spaces.** *All entrances* to each tenancy in a facility shall comply with *Section 11B*-404.

Exception: Self-service storage facilities not required to comply with *Section 11B*-225.3 shall not be required to be on an accessible route.

***11B*-206.4.6 Residential dwelling unit primary entrance.** In residential dwelling units, at least one primary entrance shall comply with *Section 11B*-404. The primary entrance to a residential dwelling unit shall not be to a bedroom.

***11B*-206.4.7 Restricted entrances.** Where restricted entrances are provided to a building or facility, *all restricted entrances* to the building or facility shall comply with *Section 11B*-404.

***11B*-206.4.8 Service entrances.** If a service entrance is the only entrance to a building or to a tenancy in a facility, that entrance shall comply with *Section 11B*-404. *In existing buildings and facilities, a service entrance shall not be the sole accessible entrance unless it is the only entrance to a building or facility.*

***11B*-206.4.9 Entrances for inmates or detainees.** Where entrances used only by inmates or detainees and security personnel are provided at judicial facilities, detention facilities or correctional facilities, at least one such entrance shall comply with *Section 11B*-404.

***11B-206.4.10 Medical care and long-term care facilities.** Weather protection by a canopy or roof overhang shall be provided at a minimum of one accessible entrance to licensed medical care and licensed long-term care facilities where the period of stay may exceed twenty-four hours. The area of weather protection shall include the passenger drop-off and loading zone complying with Section 11B-209.3 and the accessible route from the passenger loading zone to the accessible entrance it serves.*

***11B*-206.5 Doors, doorways and gates.** Doors, doorways and gates providing user passage shall be provided in accordance with *Section 11B*-206.5.

***11B*-206.5.1 Entrances.** Each entrance to a building or facility required to comply with *Section 11B*-206.4 shall *comply* with *Section 11B*-404.

***11B*-206.5.2 Rooms and spaces.** Within a building or facility, *every door, doorway or gate serving rooms and spaces* complying with *this chapter* shall comply with *Section 11B*-404.

***11B*-206.5.3 Transient lodging facilities.** In transient lodging facilities, entrances, doors and doorways providing user passage into and within guest rooms that are not required to provide mobility features complying with *Section 11B*-806.2 shall comply with *Section 11B*-404.2.3.

Exception: Shower and sauna doors in guest rooms that are not required to provide mobility features complying with *Section 11B*-806.2 shall not be required to comply with *Section 11B*-404.2.3.

***11B*-206.5.4 Residential dwelling units.** In residential dwelling units required to provide mobility features complying with *Sections 11B*-809.2 through *11B*-809.4, all doors and doorways providing user passage shall comply with *Section 11B*-404.

***11B*-206.6 Elevators.** Elevators provided for passengers shall comply with *Section 11B*-407. Where multiple elevators are provided, each elevator shall comply with *Section 11B*-407.

Exceptions:

1. In a building or facility permitted to use the exceptions to *Section 11B*-206.2.3 or permitted by *Section 11B*-206.7 to use a platform lift, elevators complying with *Section 11B*-408 shall be permitted.
2. Elevators complying with *Section 11B*-408 or *11B*-409 shall be permitted in multistory residential dwelling units. *Elevators provided as a means of access within a private residence shall be installed so that they are not accessible to the general public or to other occupants of the building.*
3. *Destination-oriented elevators complying with Section 11B-411 shall be permitted.*

***11B*-206.6.1 Existing elevators.** Where elements of existing elevators are altered, the same element shall also be altered in all elevators that are programmed to respond to the same hall call control as the altered elevator and shall comply with the requirements of *Section 11B*-407 for the altered element.

***Exception:** Where a group of existing elevators are altered into a destination-oriented elevator system, or where elements of existing destination-oriented elevators are altered, the same elements shall also be altered in all elevators that are programmed to*

respond to the same call console or group of call consoles and shall comply with the requirements of Section 11B-411 for the altered elements.

***11B*-206.7 Platform lifts.** Platform lifts shall comply with *Section 11B*-410. Platform lifts shall be permitted as a component of an accessible route in new construction in accordance with *Section 11B*-206.7. Platform lifts shall be permitted as a component of an accessible route in an existing building or facility.

***11B*-206.7.1 Performance areas and speakers' platforms.** Platform lifts shall be permitted to provide accessible routes to performance areas and speakers' platforms.

***11B*-206.7.2 Wheelchair spaces.** Platform lifts shall be permitted to provide an accessible route to comply with the wheelchair space dispersion and line-of-sight requirements of *Sections 11B*-221 and *11B*-802.

***11B*-206.7.3 Incidental spaces.** Platform lifts shall be permitted to provide an accessible route to incidental spaces which are not public use spaces and which are occupied by five persons maximum.

***11B*-206.7.4 Judicial spaces.** Platform lifts shall be permitted to provide an accessible route to: jury boxes and witness stands; raised courtroom stations, including judges' benches, clerks' stations, bailiffs' stations, deputy clerks' stations and court reporters' stations; and to depressed areas such as the well of a court.

***11B*-206.7.5 Existing site constraints.** Platform lifts shall be permitted where existing exterior site constraints make use of a ramp or elevator infeasible.

***11B*-206.7.6 Guest rooms and residential dwelling units.** Platform lifts shall be permitted to connect levels within transient lodging guest rooms required to provide mobility features complying with *Section 11B*-806.2 or residential dwelling units required to provide mobility features complying with *Sections 11B*-809.2 through *11B*-809.4 *or adaptable features complying with Sections 11B-809.6 through 11B-809.12.*

***11B*-206.7.7 Amusement rides.** Platform lifts shall be permitted to provide accessible routes to load and unload areas serving amusement rides.

***11B*-206.7.8 Play areas.** Platform lifts shall be permitted to provide accessible routes to play components or soft contained play structures.

***11B*-206.7.9 Team or player seating.** Platform lifts shall be permitted to provide accessible routes to team or player seating areas serving areas of sport activity.

***11B*-206.7.10 Recreational boating facilities and fishing piers and platforms.** Platform lifts shall be permitted to be used instead of gangways that are part of accessible routes serving recreational boating facilities and fishing piers and platforms.

***11B*-206.8 Security barriers.** Security barriers, including but not limited to security bollards and security check points, shall not obstruct a required accessible route or accessible means of egress.

Exception: Where security barriers incorporate elements that cannot comply with these requirements such as certain metal detectors, fluoroscopes or other similar devices, the accessible route shall be permitted to be located adjacent to security screening devices. The accessible route shall permit persons with disabilities passing around security barriers to maintain visual contact with their personal items to the same extent provided others passing through the security barrier.

SECTION 11B-207—ACCESSIBLE MEANS OF EGRESS

***11B*-207.1 General.** Means of egress shall comply with *Chapter 10, Section 1009 and Section 11B-207.*

Exceptions:

1. Where means of egress are permitted by local building or life safety codes to share a common path of egress travel, accessible means of egress shall be permitted to share a common path of egress travel.
2. Areas of refuge shall not be required in detention and correctional facilities.
3. *Accessible means of egress are not required to be provided in existing buildings.*
4. *Doors that provide access only to interior or exterior stairways shall not be required to comply with Section 11B-404.*
5. *Exits in excess of those required by Chapter 10, and which are more than 24 inches (610 mm) above grade shall not be required to comply with Section 11B-404 or be on an accessible route. Directional signs shall be provided in compliance with Chapter 10, Section 1009.10.*

***11B*-207.2 Platform lifts.** Standby power shall be provided for platform lifts permitted by *Chapter 10, Section 1009.5* to serve as a part of an accessible means of egress. *To ensure continued operation in case of primary power loss, platform lifts shall be provided with standby power or with self-rechargeable battery power that provides sufficient power to operate all platform lift functions for a minimum of five upward and downward trips.*

SECTION 11B-208—PARKING SPACES

***11B*-208.1 General.** Where parking spaces are provided, parking spaces shall be provided in accordance with *Section 11B*-208*. For the purposes of this section, electric vehicle charging stations are not parking spaces; see Section 11B-228.*

Exceptions:

1. Parking spaces used exclusively for buses, trucks, other delivery vehicles or vehicular impound shall not be required to comply with *Section 11B*-208 provided that lots accessed by the public are provided with a passenger *drop-off and* loading zone complying with *Section 11B*-503.

2. In public housing facilities, electric vehicle chargers are permitted to be installed at an accessible parking space assigned to the resident.

***11B*-208.2 Minimum number.** Parking spaces complying with *Section 11B-502* shall be provided in accordance with Table *11B*-208.2 except as required by *Sections 11B*-208.2.1, *11B*-208.2.2 and *11B*-208.2.3. Where more than one parking facility is provided on a site, the number of accessible spaces provided on the site shall be calculated according to the number of spaces required for each parking facility.

TABLE *11B*-208.2—PARKING SPACES

TOTAL NUMBER OF PARKING SPACES PROVIDED IN PARKING FACILITY	MINIMUM NUMBER OF REQUIRED ACCESSIBLE PARKING SPACES
1 to 25	1
26 to 50	2
51 to 75	3
76 to 100	4
101 to 150	5
151 to 200	6
201 to 300	7
301 to 400	8
401 to 500	9
501 to 1000	2 percent of total
1001 and over	20, plus 1 for each 100, or fraction thereof, over 1000

***11B*-208.2.1 Hospital outpatient facilities.** Ten percent of patient and visitor parking spaces provided to serve hospital outpatient facilities, *and free-standing buildings providing outpatient clinical services of a hospital,* shall comply with *Section 11B*-502.

***11B*-208.2.2 Rehabilitation facilities and outpatient physical therapy facilities.** Twenty percent of patient and visitor parking spaces provided to serve rehabilitation facilities specializing in treating conditions that affect mobility and outpatient physical therapy facilities shall comply with *Section 11B*-502.

***11B*-208.2.3 Residential facilities.** Parking spaces provided to serve residential facilities shall comply with *Section 11B*-208.2.3.

***11B*-208.2.3.1 Parking for residents.** Where at least one parking space is provided for each residential dwelling unit, at least one parking space complying with *Section 11B*-502 shall be provided for each residential dwelling unit required to provide mobility features complying with *Sections 11B*-809.2 through *11B*-809.4. *Where fewer than one parking space is provided for each residential dwelling unit, parking spaces complying with Section 11B-502 shall be provided in accordance with Table 11B-208.2.*

***11B*-208.2.3.2 Additional parking spaces for residents.** Where the total number of parking spaces provided for each residential dwelling unit exceeds one parking space per residential dwelling unit, 2 percent, but no fewer than one space, of all the parking spaces not covered by *Section 11B*-208.2.3.1 shall comply with *Section 11B*-502.

***11B*-208.2.3.3 Parking for guests, employees and other non-residents.** Where parking spaces are provided for persons other than residents, parking shall be provided in accordance with Table *11B*-208.2.

***11B*-208.2.4 Van parking spaces.** For every six or fraction of six parking spaces required by *Section 11B*-208.2 to comply with *Section 11B*-502, at least one shall be a van parking space complying with *Section 11B*-502.

***11B*-208.3 Location.** Parking facilities shall comply with *Section 11B*-208.3.

***11B*-208.3.1 General.** Parking spaces complying with *Section 11B*-502 that serve a particular building or facility shall be located on the shortest accessible route from parking to an entrance complying with *Section 11B*-206.4. Where parking serves more than one accessible entrance, parking spaces complying with *Section 11B*-502 shall be dispersed and located on the shortest accessible route to the accessible entrances. In parking facilities that do not serve a particular building or facility, parking spaces complying with *Section 11B*-502 shall be located on the shortest accessible route to an accessible pedestrian entrance of the parking facility.

Exceptions:

1. All van parking spaces shall be permitted to be grouped on one level within a multistory parking facility.
2. Parking spaces shall be permitted to be located in different parking facilities if substantially equivalent or greater accessibility is provided in terms of distance from an accessible entrance or entrances, parking fee and user convenience.

***11B*-208.3.2 Residential facilities.** In residential facilities containing residential dwelling units required to provide mobility features complying with *Sections 11B*-809.2 through *11B*-809.4, *and adaptable features complying with Sections 11B-809.6 through 11B-809.12,* parking spaces provided in accordance with *Section 11B*-208.2.3.1 shall be located on the shortest accessible route to

the residential dwelling unit entrance they serve. Spaces provided in accordance with *Section 11B*-208.2.3.2 shall be dispersed throughout all types of parking provided for the residential dwelling units.

Exception: Parking spaces provided in accordance with *Section 11B*-208.2.3.2 shall not be required to be dispersed throughout all types of parking if substantially equivalent or greater accessibility is provided in terms of distance from an accessible entrance, parking fee and user convenience.

11B-208.3.3 Private garages accessory to residential dwelling units. *Private garages accessory to residential dwelling units shall comply with Section 11B-208.3. Private garages include individual garages and multiple individual garages grouped together.*

11B-208.3.3.1 *Detached private garages accessory to residential dwelling units shall be accessible as required by Section 11B-208.3.*

11B-208.3.3.2 *Attached private garages directly serving a single residential dwelling unit shall provide at least one of the following options:*

1. *A door leading directly from the residential dwelling unit which immediately enters the garage.*
2. *An accessible route from the residential dwelling unit to an exterior door entering the garage.*
3. *An accessible route from the residential dwelling unit's primary entry door to the vehicular entrance at the garage.*

SECTION 11B-209—PASSENGER *DROP-OFF AND* LOADING ZONES AND BUS STOPS

***11B*-209.1 General.** Passenger *drop-off and* loading zones shall be provided in accordance with *Section 11B*-209.

***11B*-209.2 Type.** Where provided, passenger *drop-off and* loading zones shall comply with *Section 11B*-209.2.

***11B*-209.2.1 Passenger *drop-off and* loading zones.** Passenger *drop-off and* loading zones, except those required to comply with *Sections 11B*-209.2.2 and *11B*-209.2.3, shall provide at least one passenger *drop-off and* loading zone complying with *Section 11B*-503 in every continuous 100 linear feet *(30480 mm)* of *drop-off and* loading zone space, or fraction thereof.

***11B*-209.2.2 Bus loading zones.** In bus loading zones restricted to use by designated or specified public transportation vehicles, each bus bay, bus stop or other area designated for lift or ramp deployment shall comply with *Section 11B*-810.2.

***11B*-209.2.3 On-street bus stops.** On-street bus stops shall comply with *Section 11B*-810.2 to the maximum extent practicable.

***11B*-209.3 Medical care and long-term care facilities.** At least one passenger *drop-off and* loading zone complying with *Section 11B*-503 shall be provided at an accessible entrance to licensed medical care and licensed long-term care facilities where the period of stay *may exceed* twenty-four hours.

***11B*-209.4 Valet parking.** Parking facilities that provide valet parking services shall provide at least one passenger *drop-off and* loading zone complying with *Section 11B*-503*. The parking requirements of Section 11B-208.1 apply to facilities with valet parking.*

***11B*-209.5 Mechanical access parking garages.** Mechanical access parking garages shall provide at least one passenger *drop-off and* loading zone complying with *Section 11B*-503 at vehicle drop-off and vehicle pick-up areas.

SECTION 11B-210—STAIRWAYS

***11B*-210.1 General.** Interior and exterior stairs shall comply with *Section 11B*-504.

Exceptions:

1. In detention and correctional facilities, stairs that are not located in public use areas shall not be required to comply with *Section 11B*-504.
2. In alterations, stairs between levels that are connected by an accessible route shall not be required to comply with *Section 11B*-504, except that *striping complying with Section 11B-504.4.1 and* handrails complying with *Section 11B*-505 shall be provided when the stairs are altered.
3. In assembly areas, aisle stairs shall not be required to comply with *Section 11B*-504 *except that striping complying with Section 11B-504.4.1 shall be provided.*
4. Stairs that connect play components shall not be required to comply with *Section 11B*-504 *except that striping complying with Section 11B-504.4.1 shall be provided.*

SECTION 11B-211—DRINKING FOUNTAINS *AND BOTTLE-FILLING STATIONS*

***11B*-211.1 General.** Where drinking fountains are provided on an exterior site, on a floor, or within a secured area they shall be provided in accordance with *Section 11B-211.*

Exception: In detention or correctional facilities, drinking fountains only serving holding or housing cells not required to comply with *Section 11B*-232 shall not be required to comply with *Section 11B*-211.

***11B*-211.2 Minimum number.** No fewer than two drinking fountains shall be provided. *When provided, one* drinking fountain shall comply with *Sections 11B*-602.1 through *11B*-602.6, *11B-602.8 and 11B-602.9* and one drinking fountain shall comply with *Sections 11B*-602.7 *and 11B-602.9.*

Exception: Where a single drinking fountain complies with *Sections 11B*-602.1 through *11B-602.9,* it shall be permitted to be substituted for two separate drinking fountains.

***11B*-211.3 More than minimum number.** Where more than the minimum number of drinking fountains specified in *Section 11B*-211.2 are provided, 50 percent of the total number of drinking fountains provided shall comply with *Sections 11B*-602.1 through *11B*-602.6, *11B-602.8 and 11B-602.9,* and 50 percent of the total number of drinking fountains provided shall comply with *Sections 11B*-602.7 *and 11B-602.9.*

Exception: Where 50 percent of the drinking fountains yields a fraction, 50 percent shall be permitted to be rounded up or down provided that the total number of drinking fountains complying with *Section 11B*-211 equals 100 percent of drinking fountains.

11B-211.4 Bottle-filling stations. *Where bottle-filling stations are provided they shall comply with Section 11B-602.10.*

Exception: *In detention or correctional facilities, bottle-filling stations only serving holding or housing cells not required to comply with Section 11B-232 shall not be required to comply with Section 11B-211.4.*

SECTION 11B-212—KITCHENS, KITCHENETTES, *WET BARS* AND SINKS

***11B*-212.1 General.** Where provided, kitchens, kitchenettes, *wet bars* and sinks shall comply with *Section 11B*-212.

11B*-212.2 Kitchens, kitchenettes *and wet bars. Kitchens, kitchenettes *and wet bars* shall comply with *Section 11B*-804.

***11B*-212.3 Sinks.** Where sinks are provided, at least 5 percent, but no fewer than one, of each type provided in each accessible room or space shall comply with *Section 11B*-606.

Exceptions:

1. Mop, service *or scullery* sinks shall not be required to comply with *Section 11B*-212.3.
2. *Scrub sinks, as defined in California Plumbing Code Section 221.0, shall not be required to comply with Section 11B-606.*

SECTION 11B-213—TOILET FACILITIES AND BATHING FACILITIES

***11B*-213.1 General.** Where toilet facilities and bathing facilities are provided, they shall comply with *Section 11B*-213. Where toilet facilities and bathing facilities are provided in facilities permitted by *Section 11B*-206.2.3 *Exception* 1 not to connect stories by an accessible route, toilet facilities and bathing facilities shall be provided on a story connected by an accessible route to an accessible entrance.

11B-213.1.1 Toilet facilities for designated user groups. *Where separate toilet facilities are provided for the exclusive use of separate user groups, the toilet facilities serving each user group shall comply with Section 11B-213.*

***11B*-213.2 Toilet rooms and bathing rooms.** Where toilet rooms are provided, each toilet room shall comply with *Section 11B*-603. Where bathing rooms are provided, each bathing room shall comply with *Section 11B*-603.

Exceptions:

1. In alterations where it is technically infeasible to comply with *Section 11B*-603, altering existing toilet or bathing rooms shall not be required where a single unisex *(single-user or family)* toilet room or bathing room complying with *Section 11B*-213.2.1 is provided and located in the same area and on the same floor as existing inaccessible toilet or bathing rooms.
2. ***Reserved.***
3. Where multiple single user portable toilet or bathing units are clustered at a single location 5 percent, *but no fewer than one,* of the toilet units and bathing units at each cluster shall comply with *Section 11B*-603. Portable toilet units and bathing units complying with *Section 11B*-603 shall be identified by the International Symbol of Accessibility complying with *Section 11B*-703.7.2.1.
4. Where multiple single user toilet rooms are clustered at a single location, 50 percent, *but no fewer than one,* of the single user toilet rooms for each use at each cluster shall comply with *Section 11B*-603.

***11B*-213.2.1 Unisex (*single-user* or family) toilet and unisex *(single-user or family)* bathing rooms.** Unisex *(single-user or family)* toilet rooms shall contain *not more than* one lavatory, and *not more than* two water closets without urinals or one water closet and one urinal. Unisex *(single-user or family)* bathing rooms shall contain one shower or one shower and one bathtub, one lavatory, and one water closet. Doors to unisex *(single-user or family)* toilet rooms and unisex *(single-user or family)* bathing rooms shall have privacy latches.

11B-213.2.2 Unisex (Patient) toilet rooms in medical care and long-term care facilities. *Common-use unisex toilet rooms for exclusive patient use not located within patient bedrooms shall contain a lavatory and one water closet.*

11B-213.2.3 Unisex (Patient) bathing rooms in medical care and long-term care facilities. *Common-use unisex bathing rooms for exclusive patient use not located within patient bedrooms shall contain one shower or one bathtub, one lavatory, and one water closet.*

11B-213.2.4 Multi-user all-gender toilet facilities. *Where multi-user all-gender toilet facilities are provided, they shall comply with Section 11B-213.3.1.*

***11B*-213.3 Plumbing fixtures and accessories.** Plumbing fixtures and accessories provided in a toilet room or bathing room required to comply with *Section 11B*-213.2 shall comply with *Section 11B*-213.3.

11B*-213.3.1 *Toilet compartments and urinal compartments. *Where only toilet compartments are provided, they shall comply with Section 11B-213.3.1.1. Where both toilet and urinal compartments are provided, they shall comply with Section 11B-213.3.1.2.*

***11B-213.3.1.1* Toilet compartments.** Where toilet compartments are provided, at least *five percent of the toilet compartments, or five percent of the combination of toilet compartments and urinals, but no fewer than* one toilet compartment shall comply

with *Section 11B*-604.8.1. In addition to the *compartments* required to comply with *Section 11B*-604.8.1, where six or more toilet compartments are provided, or where the combination of urinals and water closets totals six or more fixtures, *toilet compartments complying with Section 11B-604.8.2 shall be provided in the same quantity as the toilet compartments required to comply with Section 11B-604.8.1.*

11B-213.3.1.2 Toilet rooms with toilet compartments and urinal compartments. *Where both toilet compartments and urinal compartments are provided, at least five percent of toilet compartments, but no fewer than one, shall comply with Section 11B-604.8.1 and at least ten percent of urinal compartments, but no fewer than one, shall comply with Section 11B-605.5. In addition to the toilet compartments required to comply with Section 11B-604.8.1 and urinal compartments required to comply with Section 11B-605.5, where the combination of urinals and water closets totals six or more fixtures, toilet compartments complying with Section 11B-604.8.2 shall be provided in the same quantity as the toilet compartments required to comply with Section 11B-604.8.1. At all compartments not required to comply with Section 11B-604.8 or Section 11B-605.5, compartment doors shall be in-swinging and self-closing. All individual compartments shall be identified with a sign complying with Section 11B-216.8.3.*

***11B*-213.3.2 Water closets.** Where water closets are provided, at least *5 percent but no fewer than* one shall comply with *Section 11B*-604*.*

***11B*-213.3.3 Urinals.** Where *one or more urinals are* provided, at least *10 percent but no fewer than* one shall comply with *Section 11B*-605*.*

***11B*-213.3.4 Lavatories.** Where lavatories are provided, at least *10 percent but no fewer than* one shall comply with *Section 11B*-606 and shall not be located in a toilet or *urinal* compartment*.*

***11B*-213.3.5 Mirrors.** Where mirrors are provided, at least one shall comply with *Section 11B*-603.3.

***11B*-213.3.6 Bathing facilities.** Where bathtubs or showers are provided, at least one bathtub complying with *Section 11B*-607 or at least one shower complying with *Section 11B*-608 shall be provided. *Where two or more accessible showers are provided within the same functional area, at least one shower shall be opposite hand from the other or others (that is, one left-hand controls versus right-hand controls). Transfer type shower compartments shall be permitted in transient lodging guest rooms, multibedroom housing units in undergraduate student housing and residential dwelling units; and shall not be permitted at other locations to meet the requirements of Section 11B-213.3.6.*

***11B*-213.3.7 Coat hooks and shelves.** Where coat hooks or shelves are provided in toilet rooms without toilet compartments, at least one of each type shall comply with *Section 11B*-603.4. Where coat hooks or shelves are provided in toilet compartments, at least one of each type complying with *Section 11B*-604.8.3 shall be provided in toilet compartments required to comply with *Section 11B*-213.3.1. Where coat hooks or shelves are provided in bathing facilities, at least one of each type complying with *Section 11B*-603.4 shall serve fixtures required to comply with *Section 11B*-213.3.6.

SECTION 11B-214—WASHING MACHINES AND CLOTHES DRYERS

***11B*-214.1 General.** Where provided, washing machines and clothes dryers shall comply with *Section 11B*-214*.*

***11B*-214.2 Washing machines.** Where three or fewer washing machines are provided, at least one shall comply with *Section 11B*-611. Where more than three washing machines are provided, at least two shall comply with *Section 11B*-611*.*

***11B*-214.3 Clothes dryers.** Where three or fewer clothes dryers are provided, at least one shall comply with *Section 11B*-611. Where more than three clothes dryers are provided, at least two shall comply with *Section 11B*-611*.*

SECTION 11B-215—FIRE ALARM SYSTEMS *AND CARBON MONOXIDE ALARM SYSTEMS*

***11B*-215.1 General.** Where fire alarm systems *and carbon monoxide alarm systems* provide audible alarm coverage, alarms shall comply with *Section 11B*-215*.*

Exception: In existing facilities, visible alarms *for fire alarm systems* shall not be required except where an existing fire alarm system is upgraded or replaced, or a new fire alarm system is installed.

***11B*-215.2 Public and common use areas.** Alarms in public use areas and common use areas shall comply with *Chapter 9, Section 907.5.2.3.1.*

***11B*-215.3 Employee work areas.** Where employee work areas have audible alarm coverage, the wiring system shall be designed so that visible alarms complying with *Chapter 9, Section 907.5.2.3.1 Exception* can be integrated into the alarm system.

***11B*-215.4 Transient lodging.** Guest rooms required to comply with *Section 11B*-224.4 shall provide fire alarms complying with *Chapter 9, Section 907.5.2.3.2, and carbon monoxide alarms, where provided, complying with Chapter 9, Section 915.*

***11B*-215.5 Residential facilities.** Where provided in residential dwelling units required to comply with *Section 11B*-809.5, *fire* alarms shall comply with *Chapter 9, Section 907.5.2.3.3 and carbon monoxide alarms shall comply with Chapter 9, Section 915.*

SECTION 11B-216—SIGNS

***11B*-216.1 General.** *New or altered signs* shall be provided in accordance with *Section 11B*-216 and shall comply with *Section 11B*-703*. The addition of or replacement of signs shall not trigger any additional path of travel requirements.*

Exceptions:

1. Building directories, menus, seat and row designations in assembly areas, occupant names, building addresses, and company names and logos shall not be required to comply with *Section 11B-216.*

2. *Reserved.*
3. Temporary, 7 days or less, signs shall not be required to comply with *Section 11B*-216.
4. In detention and correctional facilities, signs not located in public use areas shall not be required to comply with *Section 11B*-216.

***11B*-216.2 Designations.** Interior and exterior signs identifying permanent rooms and spaces shall comply with *Sections 11B*-703.1, *11B*-703.2, *11B-703.3* and *11B*-703.5. Where pictograms are provided as designations of permanent rooms and spaces, the pictograms shall comply with *Section 11B*-703.6 and shall have text descriptors complying with *Sections 11B*-703.2 and *11B*-703.5.

Exception: Exterior signs that are not located at the door to the space they serve shall not be required to comply with *Section 11B*-703.2.

***11B*-216.3 Directional and informational signs.** Signs that provide direction to or information about interior *and exterior* spaces and facilities of the site shall comply with *Section 11B*-703.5.

***11B*-216.4 Means of egress.** Signs for means of egress shall comply with *Section 11B*-216.4.

***11B*-216.4.1 Exit doors.** *Signs required by Chapter 10, Section 1013.4 at doors to* exit passageways, exit discharge and exit stairways shall *comply* with *Sections 11B*-703.1, *11B*-703.2*, 11B-703.3* and *11B*-703.5.

11B*-216.4.2 Areas of refuge *and exterior areas for assisted rescue. Signs required by *Chapter 10, Section 1009.11* to provide instructions in areas of refuge shall comply with *Section 11B*-703.5*. Signs required by Chapter 10, Section 1009.9 at doors to areas of refuge and exterior areas for assisted rescue shall comply with Sections 11B-703.1, 11B-703.2, 11B-703.3 and 11B-703.5 and include an International Symbol of Accessibility complying with Section 11B-703.7.2.1.*

***11B*-216.4.3 Directional signs.** Signs required by *Chapter 10, Section 1009.10* to provide directions to accessible means of egress shall comply with *Section 11B*-703.5.

11B-216.4.4 Delayed egress locks. *Signs required by Chapter 10, Section 1010.2.13.1, Item 6.4 at doors with delayed egress locks shall comply with Sections 11B-703.1, 11B-703.2, 11B-703.3 and 11B-703.5.*

11B*-216.5 Parking *and electric vehicle charging facilities. *Signs identifying parking spaces and signs within parking facilities shall comply with Section 11B-216.5. Signs identifying electric vehicle charging spaces and signs within electric vehicle charging facilities shall comply with Section 11B-216.5.*

11B-216.5.1 Parking spaces. Parking spaces complying with *Section 11B*-502 shall be identified by signs complying with *Sections 11B*-502.6 *and 11B-502.8.*

Exceptions:

1. ***Reserved.***
2. In residential facilities, where parking spaces are assigned to specific residential dwelling units, identification of accessible parking spaces shall not be required.

11B-216.5.2 Electric vehicle charging spaces. *Signs identifying electric vehicle charging spaces shall comply with Section 11B-812.8.*

11B-216.5.3 Parking and electric vehicle charging facilities. *Signs within parking and charging facilities shall comply with Section 11B-216.5.3.*

11B-216.5.3.1 Signs intended for use by pedestrians. *Signs intended for use by pedestrians within parking and charging facilities, including directional or informational signs indicating parking sections or levels, shall comply with the requirements of Section 11B-216.*

11B-216.5.3.2 Additional signs. *Signs within parking facilities containing parking spaces complying with Section 11B-502 shall comply with Section 11B-502.8.*

***11B*-216.6 Entrances.** *In existing buildings and facilities where* not all entrances comply with *Section 11B*-404, entrances complying with *Section 11B*-404 shall be identified by the International Symbol of Accessibility complying with *Section 11B*-703.7.2.1. *Directional signs complying with Section 11B-703.5 that indicate the location of the nearest entrance complying with Section 11B-404 shall be provided at entrances that do not comply with Section 11B-404. Directional signs complying with Section 11B-703.5, including the International Symbol of Accessibility complying with Section 11B-703.7.2.1, indicating the accessible route to the nearest accessible entrance shall be provided at junctions when the accessible route diverges from the regular circulation path.*

***11B*-216.7 Elevators.** Where existing elevators do not comply with *Section 11B*-407, elevators complying with *Section 11B*-407 shall be clearly identified with the International Symbol of Accessibility complying with *Section 11B*-703.7.2.1. *Existing buildings that have been remodeled to provide specific elevators for public use that comply with these building standards shall have the location of and the directions to these elevators posted in the building lobby on a sign complying with Section 11B-703.5, including the International Symbol of Accessibility complying with Section 11B-703.7.2.1.*

***11B*-216.8 Toilet rooms and bathing rooms.** Where existing toilet rooms or bathing rooms do not comply with *Section 11B*-603, directional signs indicating the location of the nearest toilet room or bathing room complying with *Section 11B*-603 within the facility shall be provided. Signs shall comply with *Section 11B*-703.5 and shall include the International Symbol of Accessibility complying with *Section 11B*-703.7.2.1. Where existing toilet rooms or bathing rooms do not comply with *Section 11B*-603, the toilet rooms or bathing rooms complying with *Section 11B*-603 shall be identified by the International Symbol of Accessibility complying with *Section 11B*-703.7.2.1. Where clustered single user toilet rooms or bathing facilities are permitted to use exceptions to *Section 11B*-213.2, toilet rooms or bathing facilities complying with *Section 11B*-603 shall be identified by the International Symbol of Accessibility complying with *Section 11B*-703.7.2.1 unless all toilet rooms and bathing facilities comply with *Section 11B*-603*. Existing buildings*

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that have been remodeled to provide specific toilet rooms or bathing rooms for public use that comply with these building standards shall have the location of and the directions to these rooms posted in or near the building lobby or entrance on a sign complying with Section 11B-703.5, including the International Symbol of Accessibility complying with Section 11B-703.7.2.1.

11B-216.8.1 Geometric symbols. *Geometric symbols complying with Section 11B-703.7.2.6 shall be provided at entrances to toilet and bathing rooms.*

Exceptions:

1. *Geometric symbols shall not be required at entrances to toilet and bathing rooms located within private or semi-private rooms or spaces. Such spaces include but are not limited to: patient sleeping rooms, transient lodging guest rooms and residential dwelling units.*
2. *Geometric symbols shall not be required at entrances to inmate toilet rooms and bathing rooms in detention and correctional facilities where only one gender is housed.*

11B-216.8.2 Identification for all-gender multi-user toilet facilities. *Geometric symbols complying with Section 11B-703.7.2.6.3 shall be provided at the entrance to all-gender multi-user toilet facilities. In addition, a sign complying with Sections 11B-703.1 through 11B-703.5 shall be provided stating "ALL-GENDER MULTI-USER".*

11B-216.8.3 Signs at toilet and urinal compartments. *Where both toilet compartments and urinal compartments are provided, each individual compartment shall be identified with a sign complying with Sections 11B-703.1 through 11B-703.5. Signs shall identify the type of fixture within the compartment, either "URINAL" or "TOILET". A pictogram identifying the fixture type within the compartment is not permitted.*

Exception: *A sign with tactile characters shall be permitted on an in-swinging and self-closing door at compartments not required to comply with Section 11B-604 or Section 11B-605.5.*

***11B*-216.9 TTYs.** Identification and directional signs for public TTYs shall be provided in accordance with *Section 11B*-216.9.

***11B*-216.9.1 Identification signs.** Public TTYs shall be identified by the International Symbol of TTY complying with *Section 11B*-703.7.2.2.

***11B*-216.9.2 Directional signs.** Directional signs indicating the location of the nearest public TTY shall be provided at all banks of public pay telephones not containing a public TTY. In addition, where signs provide direction to public pay telephones, they shall also provide direction to public TTYs. *If a facility has no banks of telephones, the directional signs shall be provided at the entrance or in a building directory.* Directional signs shall comply with *Section 11B*-703.5 and shall include the International Symbol of TTY complying with *Section 11B*-703.7.2.2.

***11B*-216.10 Assistive listening systems.** Each assembly area required by *Section 11B*-219 to provide assistive listening systems shall provide signs informing patrons of the availability of the assistive listening system. *The sign shall include wording that states "Assistive-Listening System Available" and shall be posted in a prominent place at or near the assembly area entrance.* Assistive listening signs shall comply with *Section 11B*-703.5 and shall include the International Symbol of Access for Hearing Loss complying with *Section 11B*-703.7.2.4.

Exception: Where ticket offices or windows are provided, signs shall not be required at each assembly area provided that signs are displayed at each ticket office or window informing patrons of the availability of assistive listening systems.

***11B*-216.11 Check-out aisles.** Where more than one check-out aisle is provided, check-out aisles complying with *Section 11B*-904.3 shall be identified by *a sign complying with Section 11B-904.3.4.* Where check-out aisles are identified by numbers, letters or functions, signs identifying check-out aisles complying with *Section 11B*-904.3 shall be located in the same location as the check-out aisle identification.

Exception: Where all check-out aisles comply with *Section 11B*-904.3, signs complying with *Section 11B*-703.7.2.1 shall not be required.

***11B*-216.12 Amusement rides.** Signs identifying the type of access provided on amusement rides shall be provided at entries to queues and waiting lines. In addition, where accessible unload areas also serve as accessible load areas, signs indicating the location of the accessible load and unload areas shall be provided at entries to queues and waiting lines. *Signs shall comply with Section 11B-703.5 and shall include the International Symbol of Accessibility complying with Section 11B-703.7.2.1.*

11B-216.13 Variable message signs. *Where provided in transportation facilities, variable message signs conveying transportation-related information shall comply with Section 11B-703.8. Where provided in buildings that are designed as emergency shelters, variable message signs conveying emergency-related information shall comply with Section 11B-703.8.*

SECTION 11B-217—TELEPHONES

***11B*-217.1 General.** Where coin-operated public pay telephones, coinless public pay telephones, public closed-circuit telephones, public courtesy phones, or other types of public telephones are provided, public telephones shall be provided in accordance with *Section 11B*-217 for each type of public telephone provided. For purposes of this section, a bank of telephones shall be considered to be two or more adjacent telephones.

***11B*-217.2 Wheelchair accessible telephones.** Where public telephones are provided, wheelchair accessible telephones complying with *Section 11B*-704.2 shall be provided in accordance with *Table 11B*-217.2.

Exception: Drive-up only public telephones shall not be required to comply with *Section 11B*-217.2.

TABLE *11B*-217.2—WHEELCHAIR ACCESSIBLE TELEPHONES	
NUMBER OF TELEPHONES PROVIDED ON A FLOOR, LEVEL OR EXTERIOR SITE	**MINIMUM NUMBER OF REQUIRED WHEELCHAIR ACCESSIBLE TELEPHONES**
1 or more single units	*At least 50 percent of telephone units, but not less than* 1 per floor, level and exterior site
1 bank	*At least 50 percent of telephone units per bank, but not less than* 1 per floor, level and exterior site
2 or more banks	*At least 50 percent of telephone units per bank, but not less than* 1 per bank *At least 1 telephone per floor shall meet the requirements for a forward reach telephone.*

***11B*-217.3 Volume controls.** All public telephones shall have volume controls complying with *Section 11B*-704.3.

***11B*-217.4 TTYs.** TTYs complying with *Section 11B*-704.4 shall be provided in accordance with *Section 11B*-217.4.

***11B*-217.4.1 Bank requirement.** Where four or more public pay telephones are provided at a bank of telephones, at least one public TTY complying with *Section 11B*-704.4 shall be provided at that bank.

Exception: ***Reserved.***

***11B*-217.4.2 Floor requirement.** TTYs in public buildings shall be provided in accordance with *Section 11B*-217.4.2.1. TTYs in private buildings shall be provided in accordance with *Section 11B*-217.4.2.2.

***11B*-217.4.2.1 Public buildings.** Where at least one public pay telephone is provided on a floor of a public building, at least one public TTY shall be provided on that floor.

***11B*-217.4.2.2 Private buildings.** Where four or more public pay telephones are provided on a floor of a private building, at least one public TTY shall be provided on that floor.

***11B*-217.4.3 Building requirement.** TTYs in public buildings shall be provided in accordance with *Section 11B*-217.4.3.1. TTYs in private buildings shall be provided in accordance with *Section 11B*-217.4.3.2.

***11B*-217.4.3.1 Public buildings.** Where at least one public pay telephone is provided in a public building, at least one public TTY shall be provided in the building. Where at least one public pay telephone is provided in a public use area of a public building, at least one public TTY shall be provided in the public building in a public use area.

***11B*-217.4.3.2 Private buildings.** Where four or more public pay telephones are provided in a private building, at least one public TTY shall be provided in the building.

Exception: *In a stadium or arena, in a convention center, in a hotel with a convention center or in a covered mall, if an interior public pay telephone is provided at least one interior public TTY shall be provided in the facility.*

***11B*-217.4.4 Exterior site requirement.** Where four or more public pay telephones are provided on an exterior site, at least one public TTY shall be provided on the site.

***11B*-217.4.5 Rest stops, emergency roadside stops and service plazas.** Where at least one public pay telephone is provided at a public rest stop, emergency roadside stop or service plaza, at least one public TTY shall be provided.

***11B*-217.4.6 Hospitals.** Where at least one public pay telephone is provided serving a hospital emergency room, hospital recovery room or hospital waiting room, at least one public TTY shall be provided at each location.

***11B*-217.4.7 Transportation facilities.** In transportation facilities, in addition to the requirements of *Sections 11B*-217.4.1 through *11B*-217.4.4, where at least one public pay telephone serves a particular entrance to a bus or rail facility, at least one public TTY shall be provided to serve that entrance. In airports, in addition to the requirements of *Sections 11B*-217.4.1 through *11B*-217.4.4, where four or more public pay telephones are located in a terminal outside the security areas, a concourse within the security areas or a baggage claim area in a terminal, at least one public TTY shall be provided in each location.

***11B*-217.4.8 Detention and correctional facilities.** In detention and correctional facilities, where at least one pay telephone is provided in a secured area used only by detainees or inmates and security personnel, at least one TTY shall be provided in at least one secured area.

***11B*-217.5 Shelves for portable TTYs.** Where a bank of telephones in the interior of a building consists of three or more public pay telephones, at least one public pay telephone at the bank shall be provided with a shelf and an electrical outlet in accordance with *Section 11B*-704.5.

Exceptions:

1. Secured areas of detention and correctional facilities where shelves and outlets are prohibited for purposes of security or safety shall not be required to comply with *Section 11B*-217.5.
2. The shelf and electrical outlet shall not be required at a bank of telephones with a TTY.

SECTION 11B-218—TRANSPORTATION FACILITIES

***11B*-218.1 General.** Transportation facilities shall comply with *Section 11B*-218.

***11B*-218.2 New and altered fixed guideway stations.** New and altered stations in rapid rail, light rail, commuter rail, intercity rail, high speed rail and other fixed guideway systems shall comply with *Sections 11B*-810.5 through *11B*-810.10.

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***11B*-218.3 Key stations and existing intercity rail stations.** Key stations and existing intercity rail stations shall comply with *Sections 11B*-810.5 through *11B*-810.10.

***11B*-218.4 Bus shelters.** Where provided, bus shelters shall comply with *Section 11B*-810.3.

***11B*-218.5 Other transportation facilities.** In other transportation facilities, public address systems shall comply with *Section 11B*-810.7 and clocks shall comply with *Section 11B*-810.8.

SECTION 11B-219—ASSISTIVE LISTENING SYSTEMS

***11B*-219.1 General.** Assistive listening systems shall be provided in accordance with *Section 11B*-219 and shall comply with *Section 11B*-706.

***11B*-219.2 Required systems.** *An assistive listening system shall be provided in assembly areas, including conference and meeting rooms.*

Exception: *This section does not apply to systems used exclusively for paging, background music, or a combination of these two uses.*

***11B*-219.3 Receivers.** *The minimum number of receivers to be provided shall be equal to 4 percent of the total number of seats, but in no case less than two.* Twenty-five percent minimum of receivers provided, but no fewer than two, shall be hearing-aid compatible in accordance with *Section 11B*-706.3.

Exceptions:

1. Where a building contains more than one assembly area and the assembly areas required to provide assistive listening systems are under one management, the total number of required receivers shall be permitted to be calculated according to the total number of seats in the assembly areas in the building provided that all receivers are usable with all systems.
2. Where all seats in an assembly area are served by an induction loop assistive listening system, the minimum number of receivers required by *Section 11B*-219.3 to be hearing-aid compatible shall not be required to be provided.

11B-219.4 Location. *If the assistive-listening system provided is limited to specific areas or seats, then such areas or seats shall be within a 50-foot (15240 mm) viewing distance of the stage or playing area and shall have a complete view of the stage or playing area.*

11B-219.5 Permanent and portable systems. *Permanently installed assistive-listening systems are required in areas if (1) they accommodate at least 50 persons or if they have audio-amplification systems, and (2) they have fixed seating. If portable assistive-listening systems are used for conference or meeting rooms, the system may serve more than one room. An adequate number of electrical outlets or other supplementary wiring necessary to support a portable assistive-listening system shall be provided.*

SECTION 11B-220—AUTOMATIC TELLER MACHINES, FARE MACHINES *AND POINT-OF-SALE DEVICES*

11B*-220.1 *Automatic teller machines and fare machines. Where automatic teller machines or self-service fare vending, collection, or adjustment machines are provided *they shall comply with Section 11B-220.1.* Where bins are provided for envelopes, waste paper, or other purposes, at least one of each type shall comply with *Section 11B*-811.

11B-220.1.1 One automatic teller machine or fare machine. *Where one automatic teller machine or fare machine is provided at a location, it shall comply with Sections 11B-707.2 through 11B-707.8.*

11B-220.1.2 Two automatic teller machines or fare machines. *Where two automatic teller machines or fare machines are provided at a location, one shall comply with Sections 11B-707.2 through 11B-707.8 and one shall comply with Sections 11B-707.3, 11B-707.4, 11B-707.5, 11B-707.6, 11B-707.7.2 and 11B-707.8.*

11B-220.1.3 Three or more automatic teller machines or fare machines. *Where three or more automatic teller machines or fare machines are provided at a location, at least 50 percent shall comply with Sections 11B-707.2 through 11B-707.8 and the rest shall comply with Sections 11B-707.3, 11B-707.4, 11B-707.5, 11B-707.6, 11B-707.7.2 and 11B-707.8.*

11B-220.2 Point-of-sale devices. *Where point-of-sale devices are provided, all devices at each location shall comply with Sections 11B-707.3, 11B-707.7.2 and 11B-707.9. Where point-of-sale devices are provided at check stands and sales and service counters required to comply with Sections 11B-227.2 and 11B-227.3, they shall comply with Sections 11B-707.2, 11B-707.3, 11B-707.7.2 and 11B-707.9.*

Exceptions:

1. *Where a single point-of-sale device is installed for use with any type of motor fuel, it shall comply with Sections 11B-707.2, 11B-707.3, 11B-707.7.2 and 11B-707.9. Where more than one point-of-sale device is installed for use with a specific type of motor fuel, a minimum of two for that type shall comply with Sections 11B-707.2, 11B-707.3, 11B-707.7.2 and 11B-707.9. Types of motor fuel include, but are not limited to, gasoline, diesel, compressed natural gas, methanol or ethanol.*
2. *Point-of-sale devices at electric vehicle charging stations required to comply with Section 11B-812 shall comply with Section 11B-812.10.3.*

SECTION 11B-221—ASSEMBLY AREAS

***11B*-221.1 General.** Assembly areas shall provide wheelchair spaces, companion seats, designated aisle seats *and semi-ambulant seats* complying with *Sections 11B*-221 and *11B*-802. In addition, lawn seating shall comply with *Section 11B*-221.5.

TABLE *11B*-221.2.1.1—NUMBER OF WHEELCHAIR SPACES IN ASSEMBLY AREAS

NUMBER OF SEATS	MINIMUM NUMBER OF REQUIRED WHEELCHAIR SPACES
4 to 25	1
26 to 50	2
51 to 150	4
151 to 300	5
301 to 500	6
501 to 5000	6, plus 1 for each *100*, or fraction thereof, between 501 through 5000
5001 and over	*46*, plus 1 for each 200, or fraction thereof, over 5000

***11B*-221.2 Wheelchair spaces.** Wheelchair spaces complying with *Section 11B*-221.2 shall be provided in assembly areas with fixed seating.

Note: *When required wheelchair spaces are not occupied by persons eligible for those spaces, individual, removable seats may be placed in those spaces.*

***11B*-221.2.1 Number and location.** Wheelchair spaces shall be provided complying with *Section 11B*-221.2.1.

***11B*-221.2.1.1 General seating.** Wheelchair spaces complying with *Section 11B*-802.1 shall be provided in accordance with Table *11B*-221.2.1.1.

***11B*-221.2.1.2 Luxury boxes, club boxes and suites in arenas, stadiums and grandstands.** In each luxury box, club box and suite within arenas, stadiums and grandstands, wheelchair spaces complying with *Section 11B*-802.1 shall be provided in accordance with Table *11B*-221.2.1.1.

***11B*-221.2.1.3 Other boxes.** In boxes other than those required to comply with *Section 11B*-221.2.1.2, the total number of wheelchair spaces required shall be determined in accordance with Table *11B*-221.2.1.1. Wheelchair spaces shall be located in not less than 20 percent of all boxes provided. Wheelchair spaces shall comply with *Section 11B*-802.1.

***11B*-221.2.1.4 Team or player seating.** At least one wheelchair space complying with *Section 11B*-802.1 shall be provided in team or player seating areas serving areas of sport activity.

Exception: Wheelchair spaces shall not be required in team or player seating areas serving bowling lanes not required to comply with *Section 11B*-206.2.11.

11B-221.2.1.5 Stadium-style movie theaters. *In stadium-style movie theaters, the total number of wheelchair spaces required shall be determined in accordance with Table 11B-221.2.1.1. The required wheelchair spaces shall be located on risers or cross-aisles in the stadium section that satisfy at least one of the following criteria:*

1. *Located within the rear 60 percent of the seats provided in the theater; or*
2. *Located within the area of the theater in which the vertical viewing angles (as measured to the top of the screen) are from the 40th to the 100th percentile of vertical viewing angles for all seats as ranked from the seats in the first row (1st percentile) to seats in the back row (100th percentile).*

11B-221.2.1.6 Specialty seating areas. *In assembly areas, wheelchair spaces shall be provided in each specialty seating area that provides spectators with distinct services or amenities that generally are not available to other spectators. The number of wheelchair spaces provided in specialty seating areas shall be included in, rather than be in addition to, the total number of wheelchair spaces required by Table 11B-221.2.1.1.*

Exception: *In existing buildings and facilities, if it is not readily achievable for wheelchair spaces to be placed in each specialty seating area, those services or amenities shall be provided to individuals with disabilities, and their companions, at other designated accessible locations at no additional cost.*

***11B*-221.2.2 Integration.** Wheelchair spaces shall be an integral part of the seating plan.

***11B*-221.2.3 Lines of sight and dispersion.** Wheelchair spaces shall provide lines of sight complying with *Section 11B*-802.2 and shall comply with *Section 11B*-221.2.3. In providing lines of sight, wheelchair spaces shall be dispersed. Wheelchair spaces shall provide spectators with choices of seating locations and viewing angles that are substantially equivalent to, or better than, the choices of seating locations and viewing angles available to all other spectators. When the number of wheelchair spaces required by *Section 11B*-221.2.1 has been met, further dispersion shall not be required. *In stadiums, arenas and grandstands, wheelchair spaces shall be dispersed to all levels that include seating served by an accessible route.*

Exception: Wheelchair spaces in team or player seating areas serving areas of sport activity shall not be required to comply with *Section 11B*-221.2.3.

***11B*-221.2.3.1 Horizontal dispersion.** Wheelchair spaces shall be dispersed horizontally. *In assembly areas that have seating encircling, in whole or in part, a field of play or performance, wheelchair spaces shall be dispersed horizontally around the field of play or performance area.*

Exceptions:

1. Horizontal dispersion shall not be required in assembly areas with 300 or fewer seats if the companion seats required by *Section 11B*-221.3 and wheelchair spaces are located within the 2nd or 3rd quartile of the total row length. Intermediate aisles shall be included in determining the total row length. If the row length in the 2nd and 3rd quartile of a row is insufficient to accommodate the required number of companion seats and wheelchair spaces, the additional companion seats and wheelchair spaces shall be permitted to be located in the 1st and 4th quartile of the row.
2. In row seating, two wheelchair spaces shall be permitted to be located side-by-side.

***11B*-221.2.3.2 Vertical dispersion.** Wheelchair spaces shall be dispersed vertically at varying distances from the screen, performance area or playing field. In addition, wheelchair spaces shall be located in each balcony or mezzanine that is located on an accessible route.

Exceptions:

1. Vertical dispersion shall not be required in assembly areas with 300 or fewer seats if the wheelchair spaces provide viewing angles that are equivalent to, or better than, the average viewing angle provided in the facility.
2. In bleachers, wheelchair spaces shall not be required to be provided in rows other than rows at points of entry to bleacher seating.

***11B-221.2.4 Temporary structures.** Wheelchair spaces shall not be located on, or be obstructed by, temporary platforms or other movable structures.*

***Exception:** When an entire seating section is placed on temporary platforms or other movable structures in an area where fixed seating is not provided, in order to increase seating for an event, wheelchair spaces may be placed in that section.*

***11B*-221.3 Companion seats.** At least one companion seat complying with *Section 11B*-802.3 shall be provided *immediately adjacent to* each wheelchair space required by *Section 11B*-221.2.1.

***11B*-221.4 Designated aisle seats.** At least 5 percent of the total number of aisle seats provided shall comply with *Section 11B*-802.4 and shall be the aisle seats located closest to accessible routes.

Exception: Team or player seating areas serving areas of sport activity shall not be required to comply with *Section 11B*-221.4.

***11B*-221.5 Lawn seating.** Lawn seating areas and exterior overflow seating areas, where fixed seats are not provided, shall connect to an accessible route.

***11B-221.6 Semi-ambulant seats.** At least 1 percent of the total number of seats, and no fewer than two, shall be semi-ambulant seats complying with Section 11B-802.5.*

SECTION 11B-222—DRESSING, FITTING AND LOCKER ROOMS

***11B*-222.1 General.** Where dressing rooms, fitting rooms or locker rooms are provided, at least 5 percent, but no fewer than one, of each type of use in each cluster provided shall comply with *Section 11B*-803.

Exception: In alterations, where it is technically infeasible to provide rooms in accordance with *Section 11B*-222.1, one room for each sex on each level shall comply with *Section 11B*-803. Where only unisex rooms are provided, unisex rooms shall be permitted.

***11B*-222.2 Coat hooks and shelves.** Where coat hooks or shelves are provided in dressing, fitting or locker rooms without individual compartments, at least one of each type shall comply with *Section 11B*-803.5. Where coat hooks or shelves are provided in individual compartments at least one of each type complying with *Section 11B*-803.5 shall be provided in individual compartments in dressing, fitting or locker rooms required to comply with *Section 11B*-222.1.

***11B-222.3 Mirrors.** Where mirrors are provided in dressing, fitting or locker rooms without individual compartments, at least one of each type shall comply with Section 11B-803.6. Where mirrors are provided in individual compartments at least one of each type complying with Section 11B-803.6 shall be provided in individual compartments in dressing, fitting or locker rooms required to comply with Section 11B-222.1.*

SECTION 11B-223—MEDICAL CARE AND LONG-TERM CARE FACILITIES

***11B*-223.1 General.** In licensed medical care facilities and licensed long-term care facilities where the period of stay exceeds twenty-four hours, patient *bedrooms* or resident sleeping rooms shall be provided in accordance with *Sections 11B*-223 *and 11B-805.*

Exception: Toilet rooms that are part of critical or intensive care patient sleeping rooms shall not be required to comply with *Section 11B*-603.

***11B*-223.1.1 Alterations.** Where *patient bedrooms or resident* sleeping rooms are altered or added, the requirements of *Section 11B*-223 shall apply only to the *patient bedrooms or resident* sleeping rooms being altered or added until the number of *patient bedrooms or resident* sleeping rooms complies with the minimum number required for new construction.

***11B-223.1.1.1 Area alterations.** Patient bedrooms or resident sleeping rooms added or altered as part of a planned renovation of an entire wing, a department or other discrete area of an existing medical facility shall comply with Section 11B-805.2 until the*

number of patient bedrooms or resident sleeping rooms provided within the area of renovation complies with the minimum number required for new construction by Section 11B-223.2 or 11B-223.3.

11B-223.1.1.2 Individual alterations. *Patient bedrooms or resident sleeping rooms added or altered individually, and not as part of an alteration of an entire area, shall comply with Section 11B-805.2, until either: a) the number of patient bedrooms or resident sleeping rooms provided in the department or area containing the individually altered or added patient bedrooms or resident sleeping rooms complies with the minimum number required if the percentage requirements of Section 11B-223.2 or 11B-223.3 were applied to that department or area; or b) the overall number of patient bedrooms or resident sleeping rooms in the facility complies with the minimum number required for new construction by Section 11B-223.2 or 11B-223.3.*

11B-223.1.1.3 Toilet and bathing facilities. *Toilet/bathing rooms which are part of patient bedrooms added or altered and required to be accessible shall comply with Section 11B-805.2.4.*

***11B*-223.2 Hospitals, rehabilitation facilities, psychiatric facilities and detoxification facilities.** Hospitals, rehabilitation facilities, psychiatric facilities and detoxification facilities shall comply with *Section 11B*-223.2. *All public use and common use areas shall be accessible in compliance with this chapter.*

***11B*-223.2.1 Facilities not specializing in treating conditions that affect mobility.** In facilities not specializing in treating conditions that affect mobility, *including hospitals, psychiatric and detoxification facilities,* at least 10 percent, but no fewer than one, of the patient *bedrooms or resident* sleeping rooms shall provide mobility features complying with *Section 11B*-805. *Accessible patient bedrooms or resident sleeping rooms shall be dispersed in a manner that is proportionate by type of medical specialty.*

***11B*-223.2.2 Facilities specializing in treating conditions that affect mobility.** In facilities specializing in treating conditions that affect mobility, 100 percent of the patient *bedrooms* shall provide mobility features complying with *Section 11B*-805*.*

11B-223.2.3 On-call rooms. *Where physician or staff on-call sleeping rooms are provided, at least 10 percent, but no fewer than one, of the on-call rooms shall provide mobility features complying with Sections 11B-806.2.3, 11B-806.2.4 and 11B-806.2.6.*

***11B*-223.3 Long-term care facilities.** In licensed long-term care facilities, *including skilled nursing facilities, intermediate care facilities and nursing homes,* at least 50 percent, but no fewer than one, of each type of *patient bedroom or* resident sleeping room shall provide mobility features complying with *Section 11B*-805*.*

11B-223.4 Professional offices of health care providers. *Professional offices of health care providers shall comply with Section 11B-805.*

SECTION 11B-224—TRANSIENT LODGING GUEST ROOMS, *HOUSING AT A PLACE OF EDUCATION AND SOCIAL SERVICE CENTER ESTABLISHMENTS*

***11B*-224.1 General.** *Hotels, motels, inns, resorts and similar transient* lodging facilities*, and housing at a place of education,* shall provide guest rooms in accordance with *Sections 11B-224.1 through 11B-224.6.*

***11B*-224.1.1 Alterations.** Where guest rooms are altered or added, the requirements of *Section 11B*-224 shall apply only to the guest rooms being altered or added until the number of guest rooms complies with the minimum number required for new construction.

***11B*-224.1.2 Guest room doors and doorways.** Entrances, doors and doorways providing user passage into and within guest rooms that are not required to provide mobility features complying with *Section 11B*-806.2 shall comply with *Section 11B*-404.2.3. *In transient lodging facilities, bathroom doors shall be either sliding or hung to swing in the direction of egress from the bathroom.*

Exception: Shower and sauna doors in guest rooms that are not required to provide mobility features complying with *Section 11B*-806.2 shall not be required to comply with *Section 11B*-404.2.3.

11B-224.1.3 Range of accommodations. *Accessible guest rooms or suites shall be dispersed among the various classes of sleeping accommodations to provide a range of options applicable to room sizes, costs and amenities provided.*

11B-224.1.4 Guest room toilet and bathing rooms. *In transient lodging facilities where toilet and bathing rooms are provided in guest rooms that are not required to provide mobility features complying with Section 11B-806.2, toilet and bathing fixtures shall only be required to comply with Section 11B-603.6.*

***11B*-224.2 Guest rooms with mobility features.** In transient lodging facilities *and housing at a place of education,* guest rooms with mobility features complying with *Section 11B*-806.2 shall be provided in accordance with Table *11B*-224.2. *In transient lodging facilities, Table 11B-224.2 shall be applied as follows:*

11B-224.2.1 Fifty or less guest room facilities. *Facilities that are subject to the same permit application on a common site that each have fifty or fewer guest rooms may be combined for the purposes of determining the required number of accessible rooms and type of accessible bathing facility.*

11B-224.2.2 More than fifty guest room facilities. *Facilities with more than fifty guest rooms shall be treated separately for the purposes of determining the required number of accessible rooms and type of accessible bathing facility.*

TABLE *11B*-224.2—GUEST ROOMS WITH MOBILITY FEATURES			
TOTAL NUMBER OF GUEST ROOMS PROVIDED	**MINIMUM NUMBER OF REQUIRED ROOMS WITHOUT ROLL-IN SHOWERS[1]**	**MINIMUM NUMBER OF REQUIRED ROOMS WITH ROLL-IN SHOWERS[2]**	**TOTAL NUMBER OF REQUIRED ROOMS**
1	*1*	*0*	*1*
2 to 25	*1*	*1*	*2*
26 to 50	*2*	*1*	*3*
51 to 75	3	1	4
76 to 100	4	1	5
101 to 150	5	2	7
151 to 200	6	2	8
201 to 300	7	3	10
301 to 400	8	4	12
401 to 500	9	4	13
501 to 1000	2 percent of total	1 percent of total	3 percent of total
1001 and over	20, plus 1 for each 100, or fraction thereof, over 1000	10, plus 1 for each 100, or fraction thereof, over 1000	30, plus 2 for each 100, or fraction thereof, over 1000

1. Provide either a bathtub complying with Section 11B-607 or a transfer type shower complying with Section 11B-608.2.1.
2. Provide either a standard roll-in type shower complying with Section 11B-608.2.2 or an alternate type roll-in shower complying with Section 11B-608.2.3.

***11B*-224.3 Beds.** In guest rooms having more than 25 beds, 5 percent minimum of the beds shall have clear floor space complying with *Section 11B*-806.2.3.

***11B*-224.4 Guest rooms with communication features.** In transient lodging facilities, guest rooms with communication features complying with *Section 11B*-806.3 shall be provided in accordance with Table *11B*-224.4.

TABLE *11B*-224.4—GUEST ROOMS WITH COMMUNICATION FEATURES	
TOTAL NUMBER OF GUEST ROOMS PROVIDED	**MINIMUM NUMBER OF REQUIRED GUEST ROOMS WITH COMMUNICATION FEATURES**
1	1
2 to 25	2
26 to 50	4
51 to 75	7
76 to 100	9
101 to 150	12
151 to 200	14
201 to 300	17
301 to 400	20
401 to 500	22
501 to 1000	5 percent of total
1001 and over	50, plus 3 for each 100 over 1000

***11B*-224.5 Dispersion.** Guest rooms required to provide mobility features complying with *Section 11B*-806.2 and guest rooms required to provide communication features complying with *Section 11B*-806.3 shall be dispersed among the various classes of guest rooms, and shall provide choices of types of guest rooms, number of beds and other amenities comparable to the choices provided to other guests. Where the minimum number of guest rooms required to comply with *Section 11B*-806 is not sufficient to allow for complete dispersion, guest rooms shall be dispersed in the following priority: guest room type, number of beds and amenities. At least one guest room required to provide mobility features complying with *Section 11B*-806.2 shall also provide communication features complying with *Section 11B*-806.3. Not more than 10 percent of guest rooms required to provide mobility features complying with *Section 11B*-806.2 shall be used to satisfy the minimum number of guest rooms required to provide communication features complying with *Section 11B*-806.3.

11B-224.6 Storage. *Fixed or built-in storage facilities within guest rooms required to provide mobility features shall comply with Section 11B-225.*

11B-224.7 Housing at a place of education. *Housing at a place of education subject to this section shall comply with Sections 11B-224.1 through 11B-224.6 and 11B-806 for transient lodging guest rooms. For the purposes of the application of this section, the term "sleeping room" is interchangeable with "guest room" as used in the transient lodging standards.*

Exception: *Housing facilities that are provided by or on behalf of a place of education, with residential dwelling units leased on a year-round basis exclusively to graduate students or faculty, and that do not contain any public use or common use areas available for educational programming, are not subject to Section 11B-224 and shall comply with Section 11B-233.*

11B-224.7.1 Multibedroom housing units with mobility features. *Multibedroom housing units containing accessible sleeping rooms with mobility features shall have an accessible route throughout the unit in compliance with Section 11B-809.2. Kitchens, when provided, within housing units containing accessible sleeping rooms with mobility features shall comply with Section 11B-804.*

11B-224.7.2 Accessible dwelling units with adaptable features. *Accessible dwelling units with adaptable features shall be provided as required by Section 11B-233.3.1.2. The number of required accessible dwelling units with adaptable features shall be reduced by the number of units with mobility features required by Section 11B-224.2.*

11B-224.8 Social service center establishments. *Group homes, halfway houses, shelters or similar social service center establishments that provide either temporary sleeping accommodations or residential dwelling units subject to this section shall comply with Section 11B-233.3.*

11B-224.8.1 More than 25-bed sleeping rooms. *In sleeping rooms with more than 25 beds, a minimum of 5 percent of the beds shall have clear floor space complying with Section 11B-806.2.3.*

11B-224.8.2 More than 50-bed facilities. *Facilities with more than 50 beds that provide common use bathing facilities shall provide at least one roll-in shower with a seat that complies with Section 11B-608. When separate shower facilities are provided for men and women, at least one roll-in shower shall be provided for each group.*

SECTION 11B-225—STORAGE

***11B*-225.1 General.** Storage facilities shall comply with *Section 11B*-225.

***11B*-225.2 Storage.** Where storage is provided in accessible spaces, at least one of each type shall comply with *Section 11B*-811.

***11B*-225.2.1 Lockers.** Where lockers are provided, at least 5 percent, but no fewer than one of each type, shall comply with *Section 11B*-811.

***11B*-225.2.2 Self-service shelving.** Self-service shelves shall be located on an accessible route complying with *Section 11B*-402. Self-service shelving shall not be required to comply with *Section 11B*-308.

11B-225.2.3 Library book stacks. *Book stacks available for public use shall be 54 inches (1372 mm) maximum above the finish floor.*

Exceptions:

1. *Book stacks available for public use may be higher than 54 inches (1372 mm) maximum above the finish floor when an attendant is available to assist persons with disabilities.*
2. *Book stacks restricted to employee use are not required to comply with these requirements.*

***11B*-225.3 Self-service storage facilities.** Self-service storage facilities shall provide individual self-service storage spaces complying with these requirements in accordance with Table *11B*-225.3.

TABLE *11B*-225.3 —SELF-SERVICE STORAGE FACILITIES

TOTAL SPACES IN FACILITY	MINIMUM NUMBER OF SPACES REQUIRED TO BE ACCESSIBLE
1 to 200	5 percent, but no fewer than 1
201 and over	10, plus 2 percent of total number of units over 200

***11B*-225.3.1 Dispersion.** Individual self-service storage spaces shall be dispersed throughout the various classes of spaces provided. Where more classes of spaces are provided than the number required to be accessible, the number of spaces shall not be required to exceed that required by Table *11B*-225.3. Self-service storage spaces complying with Table *11B*-225.3 shall not be required to be dispersed among buildings in a multibuilding facility.

SECTION 11B-226—DINING SURFACES AND WORK SURFACES

***11B*-226.1 General.** Where dining surfaces are provided for the consumption of food or drink, at least 5 percent of the seating spaces and standing spaces at the dining surfaces shall comply with *Section 11B*-902. In addition, where work surfaces are provided for use by other than employees, at least 5 percent shall comply with *Section 11B*-902.

Exceptions:

1. Sales counters and service counters shall not be required to comply with *Section 11B*-902. *See Section 11B-227.*
2. Check writing surfaces provided at check-out aisles not required to comply with *Section 11B*-904.3 shall not be required to comply with *Section 11B*-902.

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***11B*-226.2 Dispersion.** Dining surfaces required to comply with *Section 11B*-902 shall be dispersed throughout the space or facility containing dining surfaces *for each type of seating in a functional area. Work surfaces required to comply with Section 11B-902 shall be dispersed throughout the space or facility containing work surfaces.*

***11B-226.3 Dining surfaces exceeding 34 inches in height.** Where food or drink is served for consumption at a counter exceeding 34 inches (864 mm) in height, a portion of the main counter 60 inches (1525 mm) minimum in length shall be provided in compliance with Section 11B-902.3.*

***11B-226.4 Baby diaper changing station.** Baby diaper changing stations shall comply with Sections 11B-309 and 11B-902. Baby diaper changing stations when deployed shall not obstruct the required width of an accessible route except as allowed by Section 11B-307.2. Baby diaper changing stations shall not be located in toilet compartments complying with Section 11B-604.8 or urinal compartments complying with 11B-605.5 within a multiple accommodation toilet facility.*

SECTION 11B-227—SALES AND SERVICE

***11B*-227.1 General.** Where provided, check-out aisles, sales counters, service counters, food service lines, queues and waiting lines shall comply with *Sections 11B*-227 and *11B*-904*.*

***11B*-227.2 Check-out aisles.** Where check-out aisles are provided, check-out aisles complying with *Section 11B*-904.3 shall be provided in accordance with Table *11B*-227.2. Where check-out aisles serve different functions, check-out aisles complying with *Section 11B*-904.3 shall be provided in accordance with Table *11B*-227.2 for each function. Where check-out aisles are dispersed throughout the building or facility, check-out aisles complying with *Section 11B*-904.3 shall be dispersed. *When not all check-out aisles are accessible, accessible check-out aisles shall be identified by a sign complying with Section 11B-904.3.4.*

***Note:** Operational procedures are often necessary to ensure the Americans with Disabilities Act accessibility requirements are met. When check-out aisles are open for customer use, the business should ensure that a minimum of one accessible check-out aisle is always available for use by persons with disabilities. As check-out aisles are opened and closed based on fluctuating customer levels, the business should ensure that the number of accessible check-out aisles available complies with Table 11B-227.2.*

Exception: *In existing buildings, where* the selling space is under 5000 square feet (465 m^2) no more than one check-out aisle complying with *Section 11B*-904.3 shall be required*.*

TABLE *11B*-227.2 —CHECK-OUT AISLES

NUMBER OF CHECK-OUT AISLES OF EACH FUNCTION	MINIMUM NUMBER OF CHECK-OUT AISLES OF EACH FUNCTION REQUIRED TO COMPLY WITH *11B*-904.3
1 to 4	1
5 to 8	2
9 to 15	3
16 and over	3, plus 20 percent of additional aisles

***11B*-227.2.1 Altered check-out aisles.** Where check-out aisles are altered, at least one of each check-out aisle serving each function shall comply with *Section 11B*-904.3 until the number of check-out aisles complies with *Section 11B*-227.2.

***11B*-227.3 Counters.** Where provided, at least one of each type of sales counter and service counter shall comply with *Section 11B*-904.4. Where counters are dispersed throughout the building or facility, counters complying with *Section 11B*-904.4 also shall be dispersed.

***11B*-227.4 Food service lines.** Food service lines shall comply with *Section 11B*-904.5. Where self-service shelves are provided, at least 50 percent, but no fewer than one, of each type provided shall comply with *Section 11B*-308*.*

***11B*-227.5 Queues and waiting lines.** Queues and waiting lines servicing counters or check-out aisles required to comply with *Sections 11B*-904.3 or *11B*-904.4 shall comply with *Section 11B*-403*.*

SECTION 11B-228—DEPOSITORIES, VENDING MACHINES, CHANGE MACHINES, MAIL BOXES, FUEL DISPENSERS *AND ELECTRIC VEHICLE CHARGING STATIONS*

***11B*-228.1 General.** Where provided, at least one of each type of depository, vending machine, change machine and fuel dispenser shall comply with *Section 11B*-309*. Electric vehicle charging stations shall comply with Section 11B-228.3.*

Exception: Drive-up only depositories shall not be required to comply with *Section 11B*-309*.*

***11B*-228.2 Mail boxes.** Where mail boxes are provided in an interior location, at least 5 percent, but no fewer than one, of each type shall comply with *Section 11B*-309. In residential facilities, where mail boxes are provided for each residential dwelling unit, mail boxes complying with *Section 11B*-309 shall be provided for each residential dwelling unit required to provide mobility features complying with *Sections 11B*-809.2 through *11B*-809.4 *and adaptable features complying with Sections 11B-809.6 through 11B-809.12.*

11B-228.3 Electric vehicle charging stations.

***11B-228.3.1 General.** Where electric vehicle charging stations (EVCS) are provided, EVCS shall be provided in accordance with Section 11B-228.3.*

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11B-228.3.1.1 Existing facilities. *Where new EVCS are added to a facility with existing EVCS, the requirements of Section 11B-812 shall apply only to the new EVCS installed. Alterations to existing EVCS shall comply with Section 11B-228.3.*

11B-228.3.1.2 Operable parts. *Where EV chargers are provided, operable parts on all EV chargers shall comply with Section 11B-309.4.*

11B-228.3.2 Minimum number. *EVCS complying with Section 11B-812 shall be provided in accordance with Section 11B-228.3.2 for each combination of charging level and EV connector type integral to the EV charger. Each combination of charging level (such as: AC Level 1, AC Level 2, DC Fast Charge) and EV connector type shall be considered as a facility. Where EVCS are provided in more than one facility on a site, the number of EVCS complying with Section 11B-228.3.2 provided on the site shall be calculated according to the number required for each facility. In public housing facilities, EVCS provided for common use of residents shall comply with Section 11B-228.3.2. Where an EV charger can simultaneously charge more than one vehicle, the number of EV chargers provided shall be considered equivalent to the number of electric vehicles that can be simultaneously charged.*

Exceptions:

1. *EVCS not available to the general public and designated specifically for an individual EV driver shall not be required to comply with Section 11B-228.3.2.*
2. *EVCS not available to the general public and serving only fleet vehicles shall not be required to comply with Section 11B-228.3.2.*

Note: *Electric vehicle charging provided in newly constructed facilities are also subject to the California Green Building Standards Code.*

11B-228.3.2.1 Public use or common use EVCS. *Where EVCS are provided for public use or common use, EVCS complying with Section 11B-812 shall be provided in accordance with Table 11B-228.3.2.1. Where new EVCS are installed in facilities with existing EVCS, the "Total Number of EVCS at a Facility" in Table 11B-228.3.2.1 shall include both existing and new EVCS.*

Exception: *All drive-up EVCS shall comply with Section 11B-812.*

TABLE 11B-228.3.2.1—ELECTRIC VEHICLE CHARGING STATIONS FOR PUBLIC USE AND COMMON USE

TOTAL NUMBER OF EVCS AT A FACILITY[1]	MINIMUM NUMBER (by type) OF EVCS REQUIRED TO COMPLY WITH SECTION 11B-812[1]		
	Van Accessible	Standard Accessible	Ambulatory
1 to 4	1	0	0
5 to 25	1	1	0
26 to 50	1	1	1
51 to 75	1	2	2
76 to 100	1	3	3
101 and over	1, plus 1 for each 300, or fraction thereof, over 100	3, plus 1 for each 60, or fraction thereof, over 100	3, plus 1 for each 50, or fraction thereof, over 100

1. *Where an EV charger can simultaneously charge more than one vehicle, the number of EVCS provided shall be considered equivalent to the number of electric vehicles that can be simultaneously charged.*

SECTION 11B-229—WINDOWS

***11B*-229.1 General.** Where glazed openings are provided in accessible rooms or spaces for operation by occupants, at least one opening shall comply with *Section 11B*-309. Each glazed opening required by an administrative authority to be operable shall comply with *Section 11B*-309.

Exceptions:

1. Glazed openings in residential dwelling units required to comply with *Section 11B*-809 shall not be required to comply with *Section 11B*-229.
2. Glazed openings in guest rooms required to provide communication features and in guest rooms required to comply with *Section 11B*-206.5.3 shall not be required to comply with *Section 11B*-229.

SECTION 11B-230—TWO-WAY COMMUNICATION SYSTEMS

***11B*-230.1 General.** Where a two-way communication system is provided to gain admittance to a building or facility or to restricted areas within a building or facility, the system shall comply with *Section 11B*-708.

SECTION 11B-231—JUDICIAL FACILITIES

***11B*-231.1 General.** Judicial facilities shall comply with *Section 11B*-231.

***11B*-231.2 Courtrooms.** Each courtroom shall comply with *Section 11B*-808.

***11B*-231.3 Holding cells.** Where provided, central holding cells and court-floor holding cells shall comply with *Section 11B*-231.3.

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***11B*-231.3.1 Central holding cells.** Where separate central holding cells are provided for adult male, juvenile male, adult female or juvenile female, one of each type shall comply with *Section 11B*-807.2. Where central holding cells are provided and are not separated by age or sex, at least one cell complying with *Section 11B*-807.2 shall be provided.

***11B*-231.3.2 Court-floor holding cells.** Where separate court-floor holding cells are provided for adult male, juvenile male, adult female or juvenile female, each courtroom shall be served by one cell of each type complying with *Section 11B*-807.2. Where court-floor holding cells are provided and are not separated by age or sex, courtrooms shall be served by at least one cell complying with *Section 11B*-807.2. Cells may serve more than one courtroom.

***11B*-231.4 Visiting areas.** Visiting areas shall comply with *Section 11B*-231.4.

***11B*-231.4.1 Cubicles and counters.** At least 5 percent, but no fewer than one, of cubicles shall comply with *Section 11B*-902 on both the visitor and detainee sides. Where counters are provided, at least one shall comply with *Section 11B*-904.4.2 on both the visitor and detainee sides.

Exception: The detainee side of cubicles or counters at non-contact visiting areas not serving holding cells required to comply with *Section 11B*-231 shall not be required to comply with *Sections 11B*-902 or *11B*-904.4.2.

***11B*-231.4.2 Partitions.** Where solid partitions or security glazing separate visitors from detainees at least one of each type of cubicle or counter partition shall comply with *Section 11B*-904.6.

SECTION 11B-232—DETENTION FACILITIES AND CORRECTIONAL FACILITIES

***11B*-232.1 General.** Buildings, facilities, or portions thereof, in which people are detained for penal or correction purposes, or in which the liberty of the inmates is restricted for security reasons shall comply with *Section 11B*-232.

***11B*-232.2 General holding cells and general housing cells.** General holding cells and general housing cells shall be provided in accordance with *Section 11B*-232.2.

Exception: ***Reserved.***

***11B*-232.2.1 Cells with mobility features.** At least *3 percent*, but no fewer than one, of the total number of cells in a facility shall provide mobility features complying with *Section 11B*-807.2.

***11B*-232.2.1.1 Beds.** In cells having more than 25 beds, at least 5 percent of the beds shall have clear floor space complying with *Section 11B*-807.2.3.

11B-232.2.1.2 Dispersion. *Cells with mobility features shall be provided in each classification level.*

11B-232.2.1.3 Substitute cells. *When alterations are made to specific cells, detention and correctional facility operators may satisfy their obligation to provide the required number of cells with mobility features by providing the required mobility features in substitute cells (cells other than those where alterations are originally planned), provided that each substitute cell meets the following conditions:*

1. *Located within the same prison site.*
2. *Integrated with the other cells to the maximum extent feasible.*
3. *Has equal physical access as the altered cells to areas used by inmates or detainees for visitation, dining, recreation, educational programs, medical services, work programs, religious services and participation in other programs that the facility offers to inmates or detainees.*

11B-232.2.1.4 Technically infeasible. *Where it is technically infeasible to locate a substitute cell within the same prison site in compliance with Section 11B-232.2.1.3, a substitute cell shall be provided at another prison site within the correctional system.*

***11B*-232.2.2 Cells with communication features.** At least 2 percent, but no fewer than one, of the total number of general holding cells and general housing cells equipped with audible emergency alarm systems and permanently installed telephones within the cell shall provide communication features complying with *Section 11B*-807.3.

***11B*-232.3 Special holding cells and special housing cells.** Where special holding cells or special housing cells are provided, at least one cell serving each purpose shall provide mobility features complying with *Section 11B*-807.2. Cells subject to this requirement include, but are not limited to, those used for purposes of orientation, protective custody, administrative or disciplinary detention or segregation, detoxification and medical isolation.

Exception: ***Reserved.***

***11B*-232.4 Medical care facilities.** Patient bedrooms or cells required to comply with *Section 11B*-223 shall be provided in addition to any medical isolation cells required to comply with *Section 11B*-232.3.

***11B*-232.5 Visiting areas.** Visiting areas shall comply with *Section 11B*-232.5.

***11B*-232.5.1 Cubicles and counters.** At least 5 percent, but no fewer than one, of cubicles shall comply with *Section 11B*-902 on both the visitor and detainee sides. Where counters are provided, at least one shall comply with *Section 11B*-904.4.2 on both the visitor and detainee or inmate sides.

Exception: The inmate or detainee side of cubicles or counters at non-contact visiting areas not serving holding cells or housing cells required to comply with *Section 11B*-232 shall not be required to comply with *Section 11B*-902 or *11B*-904.4.2.

***11B*-232.5.2 Partitions.** Where solid partitions or security glazing separate visitors from detainees or inmates at least one of each type of cubicle or counter partition shall comply with *Section 11B*-904.6.

SECTION 11B-233—*PUBLIC HOUSING* FACILITIES

***11B*-233.1 General.** *Public housing facilities* with residential dwelling units shall comply with *Section 11B-233. See Chapter 2, Section 202 of this code for the definition of Public Housing.*

11B*-233.2 *Reserved.

11B*-233.3 *Public housing facilities. *Public housing facilities* with residential dwelling units shall comply with *Sections 11B*-233.3 *and 11B-809.*

Note: *Senior citizen housing may also be subject to Civil Code, Division 1. Part 2. Sections 51.2, 51.3 and 51.4.*

***11B*-233.3.1 Minimum number: new construction.** Newly constructed facilities with residential dwelling units shall comply with *Section 11B*-233.3.1.

Exception: Where facilities contain 15 or fewer residential dwelling units, the requirements of *Sections 11B*-233.3.1.1 and *11B-233.3.1.3* shall apply to the total number of residential dwelling units that are constructed under a single contract, or are developed as a whole, whether or not located on a common site.

***11B*-233.3.1.1 Residential dwelling units with mobility features.** In facilities with residential dwelling units, at least 5 percent, but no fewer than one unit, of the total number of residential dwelling units shall provide mobility features complying with *Sections 11B-809.1* through *11B*-809.4 and shall be on an accessible route as required by *Section 11B*-206.

11B-233.3.1.2 Residential dwelling units with adaptable features. *In buildings with three or more residential dwelling units, adaptable residential dwelling units shall comply with Section 11B-809.6 and shall be provided as required by Sections 11B-233.3.1.2.1 through 11B-233.3.1.2.6. Adaptable residential dwelling units shall be on an accessible route as required by Section 11B-206.*

Exception: *The number of required adaptable residential dwelling units shall be reduced by the number of units required by Section 11B-233.3.1.1.*

11B-233.3.1.2.1 Elevator buildings. *A residential building with one or more elevators shall have an elevator serve all floors with a residential dwelling unit primary entrance and all floors with common use areas. Elevators shall comply with Section 11B-407. Residential dwelling units on floors served by an elevator shall be adaptable.*

Exceptions:

1. *A building with only an elevator that serves a parking garage or building entry level not containing residential dwelling units to the first ground floor above grade containing residential dwelling units.*
2. *A building with a multi-story residential dwelling unit with an elevator within the unit.*

11B-233.3.1.2.2 Ground floor residential dwelling units. *Ground floor residential dwelling units shall be adaptable. A building may have one or more ground floors.*

11B-233.3.1.2.3 Ground floors above grade. *Where the first floor in a building containing residential dwelling units is a floor above grade, all units on that floor shall be adaptable.*

11B-233.3.1.2.4 Multistory residential dwelling units in buildings with one or more elevators. *In elevator buildings, facilities with multistory residential dwelling units shall comply with the following:*

1. *The primary entry of the multistory residential dwelling unit shall be on an accessible route on the floor served by the elevator.*
2. *At least one powder room or bathroom and kitchen shall be located on the primary entry level.*
3. *Rooms or spaces located on the primary entry level shall be served by an accessible route and comply with Sections 11B-809.6 through 11B-809.12.*

11B-233.3.1.2.5 Multistory residential dwelling units in buildings with no elevator. *In non-elevator buildings, a minimum of 10 percent but not less than one of the ground floor multistory residential dwelling units shall be calculated using the total number of multistory residential dwelling units in buildings on a site and shall comply with the following:*

1. *The primary entry of the multistory residential dwelling unit shall be on an accessible route.*
2. *At least one powder room or bathroom shall be located on the primary entry level.*
3. *Rooms or spaces located on the primary entry level shall be served by an accessible route and comply with Sections 11B-809.6 through 11B-809.12.*

11B-233.3.1.2.6 Public housing facility site impracticality. *The site impracticality tests in this section may be used to determine the number of required residential dwelling units with adaptable features in buildings without an elevator, located on sites with difficult terrain conditions or unusual characteristics.*

Except as provided for in Section 11B-233.3.1.2.5, the provisions of this section do not apply to multistory dwelling units in non-elevator buildings.

11B-233.3.1.2.6.1 Single building with one common (lobby) entrance. *The following may only be used for determining required access to multifamily dwelling units, in a single building with one common (lobby) entrance, located on a site with difficult terrain conditions or unusual characteristics:*

All ground floor units in non-elevator buildings shall be adaptable and on an accessible route unless an accessible route to the common (lobby) entrance is not required as determined by Test No. 1, Individual Building Test, or Test No. 3, Unusual Characteristics Test, as described in this section.

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Sites where either Test No. 1 or Test No. 3 is used and it is determined that an accessible route to the common (lobby) entrance is not required, a minimum of 20 percent of the ground floor dwelling units shall comply with Section 11B-809.6, and all remaining ground floor dwelling units shall comply with the features listed in Section 11B-233.3.1.2.6.5 unless exempted by Test No. 3, Unusual Characteristics Test.

Test No. 1—Individual Building Test may only be used if the site has terrain over 15 percent slope.

Test No. 3—Unusual Characteristics Test may be used if applicable.

Provisions to Test Nos. 1 and 2. *Where a building elevator is provided only as means of creating an accessible route to dwelling units on a ground floor, the building is not considered to be an elevator building for purposes of this code; hence, only the ground floor dwelling units would be covered.*

11B-233.3.1.2.6.2 Test number one, individual building test.

It is not required by this code to provide an accessible route when the terrain of the site is such that both of the following apply:

1. *The slopes of the undisturbed site measured in a straight line between the planned entrance and all vehicular or pedestrian arrival points within 50 feet (15 240 mm) of the planned entrance exceed 15 percent**;** and*
2. *The slopes of the planned finished grade measured between the entrance and all vehicular or pedestrian arrival points within 50 feet (15 240 mm) of the planned entrance also exceed 15 percent.*

If there are no vehicular or pedestrian arrival points within 50 feet (15 240 mm) of the planned entrance, the slope for the purposes of Test No. 1 will be measured to the closest vehicular or pedestrian arrival point.

For purposes of these requirements, vehicular or pedestrian site arrival points include public or resident parking areas, public transportation stops, passenger loading zones and public streets or sidewalks. To determine site impracticality, the slope would be measured at ground level from the point of the planned entrance on a straight line to:

1. *Each vehicular or pedestrian arrival point that is within 50 feet (15 240 mm) of the planned entrance, or*
2. *If there are no vehicular or pedestrian arrival points within the specified area, the vehicular or pedestrian arrival point closest to the planned entrance.*

In the case of sidewalks, the closest point to the entrance will be where a public sidewalk entering the site intersects with the walk to the entrance. In the case of resident parking areas, the closest point to the planned entrance will be measured from the entry point to the parking area that is located closest to the planned entrance.

11B-233.3.1.2.6.3 Test number two, site analysis test.

For a site having multiple buildings, or a site with a single building with multiple entrances, it is not required to provide a building entrance on an accessible route to all ground floor units under the following conditions:

1. *Calculate the percentage of the total buildable area of the undisturbed site with a natural grade less than 10 percent slope. The analysis of the existing slope (before grading) shall be done on a topographic survey with 2 foot (610 mm) contour intervals with slope determination made between each successive interval. The accuracy of the slope analysis shall be certified by a licensed engineer, landscape architect, architect or surveyor.*
2. *Determine the requirement of providing an accessible route to planned multifamily dwellings based on the topography of the existing natural terrain. The minimum percentage of ground floor units required on an accessible route shall equal the percentage of the total buildable area (not restricted-use areas, flood plains or wetlands) of the undisturbed site with an existing natural grade of less than 10 percent slope.*
3. *In addition to the percentage established in paragraph (2), all ground floor units in a building, or ground floor units served by a particular entrance on an accessible route defined by a calculation of the straight line slope not exceeding 8.33 percent, between their planned entrances and an arrival point, shall be on an accessible route and comply with the provisions of Section 11B-809.6.*
4. *All additional ground floor units in a building, or ground floor units served by a particular entrance, not on an accessible route shall comply with the features listed in Section 11B-233.3.1.2.6.5.*
5. *In no case shall less than 20 percent of the ground floor dwelling units be on an accessible route and comply with the provisions of Sections 11B-809.6 through 11B-809.12.*

11B-233.3.1.2.6.4 Test number three, unusual characteristics test.

Unusual characteristics include sites located in a state or federally designated floodplain or coastal high-hazard areas and sites subject to other similar requirements of law or code that require the lowest floor or the lowest structural member of the lowest floor be designed to a specified level at or above the base flood elevation. An accessible route to a building entrance is impractical due to unusual characteristics of the site when:

1. *The original site characteristics result in a difference in finished grade elevation exceeding 30 inches (762 mm) and 10 percent measured between an entrance and all vehicular or pedestrian arrival points within 50 feet (15 240 mm) of the planned entrance; or*
2. *If there are no vehicular or pedestrian arrival points within 50 feet (15 240 mm) of the planned entrance, the unusual characteristics result in a difference in finished grade elevation exceeding 30 inches (762 mm) and 10 percent measured between an entrance and the closest vehicular or pedestrian arrival point.*

11B-233.3.1.2.6.5 Additional requirements. *In buildings without elevators and where site impracticality test numbers one, two or three reduce the required number of residential dwelling units with adaptable features, the remaining units shall provide the following:*

1. *Grab bar reinforcement complying with Section 11B-809.10.5.2, 11B-809.10.6.4 or 11B-809.10.7.3.*
2. *Interior door opening width complying with Section 11B-404.2.3.*
3. *Door and gate hardware complying with Section 11B-404.2.7.*
4. *Door signal devices complying with Section 11B-809.8.4.*
5. *Door maneuvering clearance complying with Section 11B-809.8.*
6. *Water closet seat height complying with Section 11B-809.10.7.4.*
7. *Electrical receptacles, switches and controls complying with Section 11B-809.12.*
8. *Faucets complying with Section 11B-809.10.8.6.*
9. *Water closet, bathtub and lavatory maneuvering clearances complying with Section 11B-809.10.*
10. *Removable base cabinets complying with Section 11B-809.9.3.*

***11B*-233.3.1.3 Residential dwelling units with communication features.** In *public housing* facilities with residential dwelling units, at least 2 percent, but no fewer than one unit, of the total number of residential dwelling units shall provide communication features complying with *Section 11B*-809.5.

***11B*-233.3.2 Residential dwelling units for sale.** Residential dwelling units *designed and constructed or altered by public entities that will be* offered for sale *to individuals* shall provide accessible features to the extent required by *this chapter.*

11B-233.3.2.1 Buyer identified residential dwelling units for sale. *The requirements of Section 11B-233.3.2 also apply to housing programs that are operated by public entities where design and construction of particular residential dwelling units take place only after a specific buyer has been identified. In such programs, the covered entity must provide the units that comply with the requirements for accessible features to those pre-identified buyers with disabilities who have requested such a unit.*

***11B*-233.3.3 Additions.** Where an addition to an existing building results in an increase in the number of residential dwelling units, the requirements of *Section 11B*-233.3.1 shall apply only to the residential dwelling units that are added until the total number of residential dwelling units complies with the minimum number required by *Section 11B*-233.3.1. Residential dwelling units required to comply with *Sections 11B*-233.3.1.1 *and 11B-233.3.1.2* shall be on an accessible route as required by *Section 11B*-206*.*

***11B*-233.3.4 Alterations.** Alterations shall comply with *Section 11B*-233.3.4.

Exception: Where compliance with *Section 11B*-809.2, *11B*-809.3 or *11B*-809.4 is technically infeasible, or where it is technically infeasible to provide an accessible route to a residential dwelling unit, the entity shall be permitted to alter or construct a comparable residential dwelling unit to comply with *Sections 11B*-809.2 through *11B*-809.4 provided that the minimum number of residential dwelling units required by *Sections 11B*-233.3.1.1 *and 11B-233.3.1.3,* as applicable, is satisfied.

***11B*-233.3.4.1 Alterations to vacated buildings.** Where a building is vacated for the purposes of alteration, and the altered building contains more than 15 residential dwelling units, at least 5 percent of the residential dwelling units shall comply with *Sections 11B*-809.2 through *11B*-809.4 and shall be on an accessible route as required by *Section 11B*-206. In addition, at least 2 percent of the residential dwelling units shall comply with *Section 11B*-809.5.

***11B*-233.3.4.2 Alterations to individual residential dwelling units.** In individual residential dwelling units, where a bathroom or a kitchen is substantially altered, and at least one other room is altered, the requirements of *Section 11B*-233.3.1 shall apply to the altered residential dwelling units until the total number of residential dwelling units complies with the minimum number required by *Sections 11B*-233.3.1.1 *and 11B-233.3.1.3.* Residential dwelling units required to comply with *Section 11B*-233.3.1.1 shall be on an accessible route as required by *Section 11B*-206*.*

Exception: Where facilities contain 15 or fewer residential dwelling units, the requirements of *Sections 11B*-233.3.1.1 *and 11B-233.3.1.3* shall apply to the total number of residential dwelling units that are altered under a single contract, or are developed as a whole, whether or not located on a common site.

11B-233.3.4.3 Alterations to residential dwelling units with adaptable features. *The building standards for residential dwelling units with adaptable features do not apply to the alteration, repair, rehabilitation or maintenance of residential dwelling units constructed for first occupancy on or prior to March 13, 1991. Multifamily dwelling units with adaptable features constructed for first occupancy after March 13, 1991 shall be maintained in compliance with the accessibility standards in effect at the time of construction.*

Exception: *Where any portion of a building's exterior is preserved, but the interior of the building is removed, including all structural portions of floors and ceilings and a new building is constructed behind the existing exterior, the building is considered a new building for determining the application of this chapter.*

***11B*-233.3.5 Dispersion.** *Residential* dwelling units required to provide mobility features complying with *Sections 11B*-809.2 through *11B*-809.4 and residential dwelling units required to provide communication features complying with *Section 11B*-809.5 shall be dispersed among the various types of residential dwelling units in the facility and shall provide choices of residential dwelling units comparable to, and integrated with, those available to other residents.

Exception: *Where* multistory residential dwelling units are one of the types of residential dwelling units provided, one-story residential dwelling units shall be permitted as a substitute for multistory residential dwelling units where equivalent spaces and amenities are provided in the one-story residential dwelling unit.

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11B-233.3.6 Graduate student and faculty housing at a place of education. *Housing facilities that are provided by or on behalf of a place of education, with residential dwelling units leased on a year-round basis exclusively to graduate students or faculty, and that do not contain any public use or common use areas available for educational programming, are not subject to Section 11B-224 and shall comply with Section 11B-233.*

SECTION 11B-234—AMUSEMENT RIDES

***11B*-234.1 General.** Amusement rides shall comply with *Section 11B*-234.

Exception: Mobile or portable amusement rides shall not be required to comply with *Section 11B*-234.

***11B*-234.2 Load and unload areas.** Load and unload areas serving amusement rides shall comply with *Section 11B*-1002.3.

***11B*-234.3 Minimum number.** Amusement rides shall provide at least one wheelchair space complying with *Section 11B*-1002.4, or at least one amusement ride seat designed for transfer complying with *Section 11B*-1002.5, or at least one transfer device complying with *Section 11B*-1002.6.

Exceptions:

1. Amusement rides that are controlled or operated by the rider shall not be required to comply with *Section 11B*-234.3.
2. Amusement rides designed primarily for children, where children are assisted on and off the ride by an adult, shall not be required to comply with *Section 11B*-234.3.
3. Amusement rides that do not provide amusement ride seats shall not be required to comply with *Section 11B*-234.3.

***11B*-234.4 Existing amusement rides.** Where existing amusement rides are altered, the alteration shall comply with *Section 11B*-234.4.

***11B*-234.4.1 Load and unload areas.** Where load and unload areas serving existing amusement rides are newly designed and constructed, the load and unload areas shall comply with *Section 11B*-1002.3.

***11B*-234.4.2 Minimum number.** Where the structural or operational characteristics of an amusement ride are altered to the extent that the amusement ride's performance differs from that specified by the manufacturer or the original design, the amusement ride shall comply with *Section 11B*-234.3.

SECTION 11B-235—RECREATIONAL BOATING FACILITIES

***11B*-235.1 General.** Recreational boating facilities shall comply with *Section 11B*-235.

***11B*-235.2 Boat slips.** Boat slips complying with *Section 11B*-1003.3.1 shall be provided in accordance with Table *11B*-235.2. Where the number of boat slips is not identified, each 40 feet *(12192 mm)* of boat slip edge provided along the perimeter of the pier shall be counted as one boat slip for the purpose of this section.

***11B*-235.2.1 Dispersion.** Boat slips complying with *Section 11B*-1003.3.1 shall be dispersed throughout the various types of boat slips provided. Where the minimum number of boat slips required to comply with *Section 11B*-1003.3.1 has been met, no further dispersion shall be required.

***11B*-235.3 Boarding piers at boat launch ramps.** Where boarding piers are provided at boat launch ramps, at least 5 percent, but no fewer than one, of the boarding piers shall comply with *Section 11B*-1003.3.2.

SECTION 11B-236—EXERCISE MACHINES AND EQUIPMENT

***11B*-236.1 General.** At least one of each type of exercise machine and equipment shall comply with *Section 11B*-1004.

SECTION 11B-237—FISHING PIERS AND PLATFORMS

***11B*-237.1 General.** Fishing piers and platforms shall comply with *Section 11B*-1005.

TABLE *11B*-235.2 —BOAT SLIPS

TOTAL NUMBER OF BOAT SLIPS PROVIDED IN FACILITY	MINIMUM NUMBER OF REQUIRED ACCESSIBLE BOAT SLIPS
1 to 25	1
26 to 50	2
51 to 100	3
101 to 150	4
151 to 300	5
301 to 400	6
401 to 500	7
501 to 600	8
601 to 700	9
701 to 800	10
801 to 900	11
901 to 1000	12
1001 and over	12, plus 1 for every 100, or fraction thereof, over 1000

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SECTION 11B-238—GOLF FACILITIES

***11B*-238.1 General.** Golf facilities shall comply with *Section 11B*-238.

***11B*-238.2 Golf courses.** Golf courses shall comply with *Section 11B*-238.2.

***11B*-238.2.1 Teeing grounds.** Where one teeing ground is provided for a hole, the teeing ground shall be designed and constructed so that a golf car can enter and exit the teeing ground. Where two teeing grounds are provided for a hole, the forward teeing ground shall be designed and constructed so that a golf car can enter and exit the teeing ground. Where three or more teeing grounds are provided for a hole, at least two teeing grounds, including the forward teeing ground, shall be designed and constructed so that a golf car can enter and exit each teeing ground.

Exception: In existing golf courses, the forward teeing ground shall not be required to be one of the teeing grounds on a hole designed and constructed so that a golf car can enter and exit the teeing ground where compliance is not feasible due to terrain.

***11B*-238.2.2 Putting greens.** Putting greens shall be designed and constructed so that a golf car can enter and exit the putting green.

***11B*-238.2.3 Weather shelters.** Where provided, weather shelters shall be designed and constructed so that a golf car can enter and exit the weather shelter and shall comply with *Section 11B*-1006.4.

***11B*-238.3 Practice putting greens, practice teeing grounds and teeing stations at driving ranges.** At least 5 percent, but no fewer than one, of practice putting greens, practice teeing grounds and teeing stations at driving ranges shall be designed and constructed so that a golf car can enter and exit the practice putting greens, practice teeing grounds and teeing stations at driving ranges.

SECTION 11B-239—MINIATURE GOLF FACILITIES

***11B*-239.1 General.** Miniature golf facilities shall comply with *Section 11B*-239.

***11B*-239.2 Minimum number.** At least 50 percent of holes on miniature golf courses shall comply with *Section 11B*-1007.3.

***11B*-239.3 Miniature golf course configuration.** Miniature golf courses shall be configured so that the holes complying with *Section 11B*-1007.3 are consecutive. Miniature golf courses shall provide an accessible route from the last hole complying with *Section 11B*-1007.3 to the course entrance or exit without requiring travel through any other holes on the course.

Exception: One break in the sequence of consecutive holes shall be permitted provided that the last hole on the miniature golf course is the last hole in the sequence.

SECTION 11B-240—PLAY AREAS

***11B*-240.1 General.** Play areas for children ages 2 and over shall comply with *Section 11B*-240. Where separate play areas are provided within a site for specific age groups, each play area shall comply with *Section 11B*-240.

Exceptions:

1. Play areas located in family child-care facilities where the proprietor actually resides shall not be required to comply with *Section 11B*-240.
2. In existing play areas, where play components are relocated for the purposes of creating safe use zones and the ground surface is not altered or extended for more than one use zone, the play area shall not be required to comply with *Section 11B*-240.
3. Amusement attractions shall not be required to comply with *Section 11B*-240.
4. Where play components are altered and the ground surface is not altered, the ground surface shall not be required to comply with *Section 11B*-1008.2.6 unless required by *Section 11B*-202.4.

***11B*-240.1.1 Additions.** Where play areas are designed and constructed in phases, the requirements of *Section 11B*-240 shall apply to each successive addition so that when the addition is completed, the entire play area complies with all the applicable requirements of *Section 11B*-240.

***11B*-240.2 Play components.** Where provided, play components shall comply with *Section 11B*-240.2.

***11B*-240.2.1 Ground level play components.** Ground level play components shall be provided in the number and types required by *Section 11B*-240.2.1. Ground level play components that are provided to comply with *Section 11B*-240.2.1.1 shall be permitted to satisfy the additional number required by *Section 11B*-240.2.1.2 if the minimum required types of play components are satisfied. Where two or more required ground level play components are provided, they shall be dispersed throughout the play area and integrated with other play components.

***11B*-240.2.1.1 Minimum number and types.** Where ground level play components are provided, at least one of each type shall be on an accessible route and shall comply with *Section 11B*-1008.4.

***11B*-240.2.1.2 Additional number and types.** Where elevated play components are provided, ground level play components shall be provided in accordance with Table *11B*-240.2.1.2 and shall comply with *Section 11B*-1008.4.

Exception: If at least 50 percent of the elevated play components are connected by a ramp and at least 3 of the elevated play components connected by the ramp are different types of play components, the play area shall not be required to comply with *Section 11B*-240.2.1.2.

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TABLE *11B*-240.2.1.2—NUMBER AND TYPES OF GROUND LEVEL PLAY COMPONENTS REQUIRED TO BE ON ACCESSIBLE ROUTES		
NUMBER OF ELEVATED PLAY COMPONENTS PROVIDED	**MINIMUM NUMBER OF GROUND LEVEL PLAY COMPONENTS REQUIRED TO BE ON AN ACCESSIBLE ROUTE**	**MINIMUM NUMBER OF DIFFERENT TYPES OF GROUND LEVEL PLAY COMPONENTS REQUIRED TO BE ON AN ACCESSIBLE ROUTE**
1	Not applicable	Not applicable
2 to 4	1	1
5 to 7	2	2
8 to 10	3	3
11 to 13	4	3
14 to 16	5	3
17 to 19	6	3
20 to 22	7	4
23 to 25	8	4
26 and over	8, plus 1 for each additional 3, or fraction thereof, over 25	5

***11B*-240.2.2 Elevated play components.** Where elevated play components are provided, at least 50 percent shall be on an accessible route and shall comply with *Section 11B*-1008.4.

SECTION 11B-241—SAUNAS AND STEAM ROOMS

***11B*-241.1 General.** Where provided, saunas and steam rooms shall comply with *Section 11B*-612.

Exception: Where saunas or steam rooms are clustered at a single location, no more than 5 percent of the saunas and steam rooms, but no fewer than one, of each type in each cluster shall be required to comply with *Section 11B*-612.

SECTION 11B-242—SWIMMING POOLS, WADING POOLS AND SPAS

***11B*-242.1 General.** Swimming pools, wading pools and spas shall comply with *Section 11B*-242.

***11B*-242.2 Swimming pools.** At least two accessible means of entry shall be provided for swimming pools. Accessible means of entry shall be swimming pool lifts complying with *Section 11B*-1009.2; sloped entries complying with *Section 11B*-1009.3; transfer walls complying with *Section 11B*-1009.4; transfer systems complying with *Section 11B*-1009.5; and pool stairs complying with *Section 11B*-1009.6. At least one accessible means of entry provided shall comply with *Sections 11B*-1009.2 or *11B*-1009.3.

Exceptions:

1. Where a swimming pool has less than 300 linear feet (91 m) of swimming pool wall, no more than one accessible means of entry shall be required provided that the accessible means of entry is a swimming pool lift complying with *Section 11B*-1009.2 or sloped entry complying with *Section 11B*-1009.3.
2. Wave action pools, leisure rivers, sand bottom pools and other pools where user access is limited to one area shall not be required to provide more than one accessible means of entry provided that the accessible means of entry is a swimming pool lift complying with *Section 11B*-1009.2, a sloped entry complying with *Section 11B*-1009.3, or a transfer system complying with *Section 11B*-1009.5.
3. Catch pools shall not be required to provide an accessible means of entry provided that the catch pool edge is on an accessible route.

***11B*-242.3 Wading pools.** At least one accessible means of entry shall be provided for wading pools. Accessible means of entry shall comply with sloped entries complying with *Section 11B*-1009.3.

***11B*-242.4 Spas.** At least one accessible means of entry shall be provided for spas. Accessible means of entry shall comply with swimming pool lifts complying with *Section 11B*-1009.2; transfer walls complying with *Section 11B*-1009.4; or transfer systems complying with *Section 11B*-1009.5.

Exception: Where spas are provided in a cluster, no more than 5 percent, but no fewer than one, spa in each cluster shall be required to comply with *Section 11B*-242.4.

SECTION 11B-243—SHOOTING FACILITIES WITH FIRING POSITIONS

***11B*-243.1 General.** Where shooting facilities with firing positions are designed and constructed at a site, at least 5 percent, but no fewer than one, of each type of firing position shall comply with *Section 11B*-1010.

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SECTION 11B-244—RELIGIOUS FACILITIES

11B-244.1 General. *Religious facilities shall be accessible in accordance with the provisions of this code. Where specific areas within religious facilities contain more than one use, each portion shall comply with the applicable requirements for that use.*

SECTION 11B-245—PUBLIC ACCOMMODATIONS LOCATED IN PRIVATE RESIDENCES

11B-245.1 General. *Public accommodations located in private residences shall comply with Section 11B-245.*

11B-245.2 Application. *When a public accommodation is located in a private residence, that portion used exclusively in the operation of the public accommodation or that portion used both for the public accommodation and for residential purposes is covered by the new construction and alterations requirements of this chapter.*

Exception: *The portion of the residence used exclusively as a residence is not required to be accessible in accordance with this chapter.*

11B-245.3 Accessible elements required. *The accessible portion of the residence extends to those elements used to enter the public accommodation, including the front sidewalk, if any, the door or entryway, and hallways; and those portions of the residence, interior or exterior, available to or used by employees or visitors of the public accommodation, including restrooms.*

SECTION 11B-246—OUTDOOR DEVELOPED AREAS

11B-246.1 General. *Outdoor developed areas shall comply with Section 11B-246.*

Exceptions:

1. *Where the enforcing agency finds that, in specific areas, the natural environment would be materially damaged by compliance with these regulations, such areas shall be subject to these regulations only to the extent that such material damage would not occur.*
2. *Automobile access or accessible routes are not required when the enforcing agency determines compliance with this chapter would create an unreasonable hardship as defined in Chapter 2, Section 202.*

11B-246.2 Camping facilities. *In camping facilities where campsites are provided, at least two campsites and one additional campsite for each 100 campsites or fraction thereof, shall be accessed by and connected to sanitary facilities by travel routes with a maximum slope of 1:12. Permanent toilet and bathing facilities serving campsites shall comply with Section 11B-603.*

11B-246.3 Beaches. *Beaches shall be accessible.*

11B-246.4 Day use areas and vista points. *Day use areas, vista points and similar areas shall be accessible.*

11B-246.5 Picnic areas. *Where picnic tables are provided, at least one picnic table, and one additional table for each 20 tables or fraction thereof, shall be accessible and comply with Section 11B-902.*

11B-246.6 Parking lots. *Parking lots shall comply with Sections 11B-208 and 11B-502 and shall be provided with curb cuts leading to adjacent walks, paths or trails.*

11B-246.7 Trails and paths. *Trails, paths and nature walk areas, or portions of them, shall be constructed with gradients permitting at least partial use by wheelchair occupants. Buildings and other functional areas shall be served by paths or walks with firm and stable surfaces.*

11B-246.8 Nature trails. *Nature trails and similar educational and informational areas shall be accessible to individuals with vision impairments by the provision of rope guidelines, raised Arabic numerals and symbols, or other similar guide and assistance devices.*

SECTION 11B-247—DETECTABLE WARNINGS AND DETECTABLE DIRECTIONAL TEXTURE

11B-247.1 Detectable warnings.

11B-247.1.1 General. *Detectable warnings shall be provided in accordance with Section 11B-247.1 and shall comply with Section 11B-705.1.*

11B-247.1.2 Where required. *Detectable warnings shall be provided where required by Section 11B-247.1.2.*

11B-247.1.2.1 Platform edges. *Platform boarding edges shall have detectable warnings complying with Sections 11B-705.1.1 and 11B-705.1.2.1.*

11B-247.1.2.2 Curb ramps. *Curb ramps shall have detectable warnings complying with Sections 11B-705.1.1 and 11B-705.1.2.2.*

11B-247.1.2.3 Islands or cut-through medians. *Islands or cut-through medians shall have detectable warnings complying with Sections 11B-705.1.1 and 11B-705.1.2.3.*

11B-247.1.2.4 Bus stops. *Where detectable warnings are provided at bus stop boarding and alighting areas in compliance with Section 11B-810.2.3, detectable warnings shall comply with Sections 11B-705.1.1 and 11B-705.1.2.4.*

11B-247.1.2.5 Blended transitions. *Blended transitions shall have detectable warnings complying with Sections 11B-705.1.1 and 11B-705.1.2.5.*

11B-247.1.2.6 Reflecting pools. *The edges of reflecting pools shall be protected by railings, walls, warning curbs or detectable warnings complying with Sections 11B-705.1.1 and 11B-705.1.2.6.*

11B-247.1.2.7 Track crossings. *Where it is necessary to cross tracks to reach transit boarding platforms, detectable warnings complying with Sections 11B-705.1.1 and 11B-705.1.2.7 shall be provided.*

11B-247.2 Detectable directional texture. *At transit boarding platforms, the pedestrian access shall be identified with a detectable directional texture complying with Section 11B-705.2.*

SECTION 11B-248—COMMON USE AREAS AND EMPLOYEE WORK AREAS

11B-248.1 Common use areas. *Common use areas shall comply with this chapter.*

11B-248.2 Employee work areas. *Employee work areas shall comply with this chapter.*

SECTION 11B-249—ADULT CHANGING FACILITIES

11B-249.1 General. *Adult changing facilities shall comply with Section 11B-249.*

11B-249.1.1 *Where adult changing facilities are provided, each adult changing facility shall comply with Section 11B-813.*

11B-249.1.2 *Newly constructed commercial places of public amusement shall provide no fewer than one adult changing facility in compliance with Section 11B-813.*

11B-249.1.3 *On or after January 1, 2025, alterations to existing commercial places of public amusement which require a permit or for which the estimated cost is ten thousand dollars ($10,000) or more shall provide no fewer than one adult changing facility in compliance with Section 11B-813.*

Exception: *Existing commercial places of public amusement with an existing adult changing facility in compliance with Section 11B-813 shall not be required to provide additional adult changing facilities.*

SECTION 11B-250—CIRCULATION PATHS

11B-250.1 General. *Circulation paths contiguous to vehicular traffic shall be physically separated from vehicular traffic. Vehicular traffic includes travel through parking facilities, into and out of parking spaces, into and out of electric vehicle charging spaces, and along roadways, driveways and drive aisles. Physical separation shall be provided with circulation paths raised 4 inches (102 mm) minimum above the area where vehicular traffic occurs.*

Exceptions:

1. *Curb ramps and blended transitions with detectable warnings complying with Section 11B-247 may be used to connect raised circulation paths and pedestrian crossings within areas of vehicular traffic. Blended transitions and cut-through medians with detectable warnings complying with Section 11B-247 may be used to connect circulation paths and pedestrian crossings at similar elevations within areas of vehicular traffic.*
2. *At locations where sidewalks and walks in the public right-of-way cross driveways without yield or stop traffic control, compliance with this section shall not be required.*
3. *At locations where circulation paths cross driveways or drive aisles, circulation paths shall not be required to comply with this section and detectable warnings shall not be permitted. Beyond the crossing where continuation of the circulation path within a parking facility leads immediately to and does not continue beyond only parking spaces complying with Section 11B-502, passenger drop-off and loading zones complying with Section 11B-503 and electric vehicle charging stations complying with Section 11B-812, the circulation path shall not be required to be raised.*
4. *In alterations to existing parking facilities, including alterations required by Section 11B-202.4, physical separation may be provided with detectable warnings complying with Sections 11B-247 and 11B-705.1 in lieu of raised circulation paths.*
5. *Access aisles serving any electric vehicle charging station vehicle spaces complying with Section 11B-812, parking spaces complying with Section 11B-502, or passenger drop-off and loading zones complying with Section 11B-503 shall not be required to comply with this section.*
6. *At each electric vehicle charging station complying with Section 11B-812 where the charger and its controls are oriented toward the vehicle space it serves and the charger's clear floor spaces for operable parts and point-of-sale devices are at the same elevation as the vehicle space, the accessible route complying with Section 11B-812.5.2 shall not be required to comply with this section.*

DIVISION 3: BUILDING BLOCKS

SECTION 11B-301—GENERAL

***11B*-301.1 Scope.** The provisions of *Division 3* shall apply where required by *Division 2* or where referenced by a requirement in this *chapter.*

SECTION 11B-302—FLOOR OR GROUND SURFACES

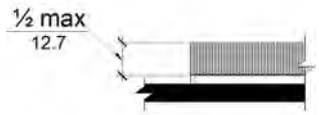
***11B*-302.1 General.** Floor and ground surfaces shall be stable, firm and slip resistant and shall comply with *Section 11B*-302*.*

Exceptions:

1. Within animal containment areas, floor and ground surfaces shall not be required to be stable, firm and slip resistant.
2. Areas of sport activity shall not be required to comply with *Section 11B*-302*.*

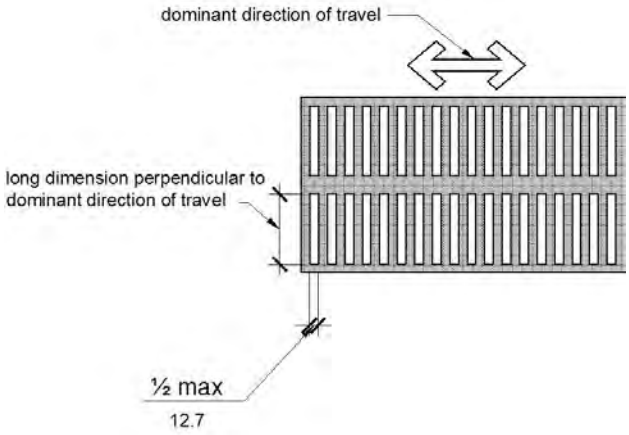
***11B*-302.2 Carpet.** Carpet or carpet tile shall be securely attached and shall have a firm cushion, pad, or backing or no cushion or pad. Carpet or carpet tile shall have a level loop, textured loop, level cut pile, level cut/uncut pile texture. Pile height shall be $^1/_2$ inch (*12.7* mm) maximum. Exposed edges of carpet shall be fastened to floor surfaces and shall have trim on the entire length of the exposed edge. Carpet edge trim shall comply with *Section 11B*-303*.*

FIGURE *11B*-302.2—CARPET PILE HEIGHT



***11B*-302.3 Openings.** Openings in floor or ground surfaces shall not allow passage of a sphere more than $^1/_2$ inch (*12.7* mm) diameter except as allowed in *Sections 11B*-407.4.3, *11B*-409.4.3, *11B*-410.4, *11B*-810.5.3 and *11B*-810.10. Elongated openings shall be placed so that the long dimension is perpendicular to the dominant direction of travel.

FIGURE *11B*-302.3—ELONGATED OPENINGS IN FLOOR OR GROUND SURFACES



SECTION 11B-303—CHANGES IN LEVEL

***11B*-303.1 General.** Where changes in level are permitted in floor or ground surfaces, they shall comply with *Section 11B*-303*.*

Exceptions:

1. Animal containment areas shall not be required to comply with *Section 11B*-303.
2. Areas of sport activity shall not be required to comply with *Section 11B*-303*.*

***11B*-303.2 Vertical.** Changes in level of $^1/_4$ inch (6.4 mm) high maximum shall be permitted to be vertical *and without edge treatment.*

FIGURE *11B*-303.2—VERTICAL CHANGE IN LEVEL

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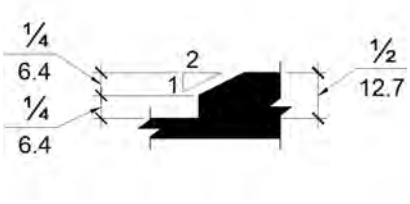
***11B*-303.3 Beveled.** Changes in level between $^{1}/_{4}$ inch (6.4 mm) high minimum and $^{1}/_{2}$ inch (*12.7* mm) high maximum shall be beveled with a slope not steeper than 1:2.

FIGURE *11B*-303.3—BEVELED CHANGE IN LEVEL



***11B*-303.4 Ramps.** Changes in level greater than $^{1}/_{2}$ inch (*12.7* mm) high shall be ramped, and shall comply with *Section 11B*-405 or *11B*-406.

11B-303.5 Warning curbs. *Abrupt changes in level exceeding 4 inches (102 mm) in a vertical dimension between walks, sidewalks or other pedestrian ways and adjacent surfaces or features shall be identified by warning curbs at least 6 inches (152 mm) in height above the walk or sidewalk surface.*

Exceptions:

1. *A warning curb is not required between a walk or sidewalk and an adjacent street or driveway.*
2. *A warning curb is not required when a guard or handrail is provided with a guide rail centered 2 inches (51 mm) minimum and 4 inches (102 mm) maximum above the surface of the walk or sidewalk.*

SECTION 11B-304—TURNING SPACE

***11B*-304.1 General.** Turning space shall comply with *Section 11B*-304.

***11B*-304.2 Floor or ground surfaces.** Floor or ground surfaces of a turning space shall comply with *Section 11B*-302. Changes in level, *slopes exceeding 1:48, and detectable warnings shall not be permitted.*

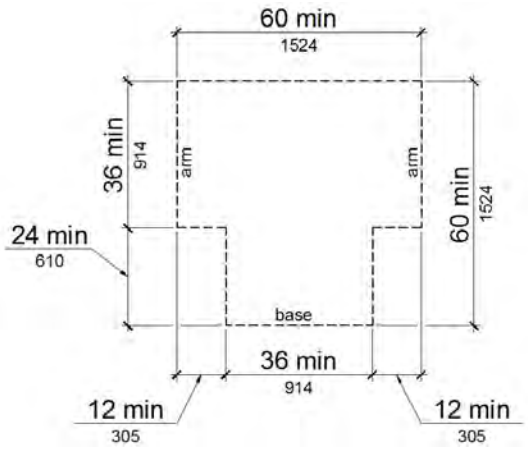
Exception: *Reserved.*

***11B*-304.3 Size.** Turning space shall comply with *Section 11B*-304.3.1 or *11B*-304.3.2.

***11B*-304.3.1 Circular space.** The turning space shall be a space of 60 inches (*1524* mm) diameter minimum. The space shall be permitted to include knee and toe clearance complying with *Section 11B*-306.

***11B*-304.3.2 T-Shaped space.** The turning space shall be a T-shaped space within a 60 inch (*1524* mm) square minimum with arms and base 36 inches (*914* mm) wide minimum. Each arm of the T shall be clear of obstructions 12 inches (305 mm) minimum in each direction and the base shall be clear of obstructions 24 inches (610 mm) minimum. The space shall be permitted to include knee and toe clearance complying with *Section 11B*-306 only at the end of either the base or one arm.

FIGURE *11B*-304.3.2—T-SHAPED TURNING SPACE



***11B*-304.4 Door swing.** Doors shall be permitted to swing into turning spaces.

SECTION 11B-305—CLEAR FLOOR OR GROUND SPACE

***11B*-305.1 General.** Clear floor or ground space shall comply with *Section 11B*-305.

***11B*-305.2 Floor or ground surfaces.** Floor or ground surfaces of a clear floor or ground space shall comply with *Section 11B-302. Changes in level, slopes exceeding 1:48, and detectable warnings shall not be permitted.*

Exception: *Reserved.*

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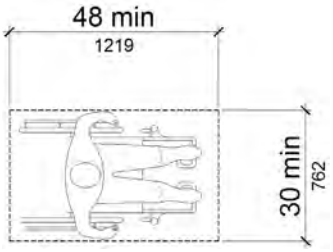
***11B*-305.3 Size.** The clear floor or ground space shall be 30 inches (*762* mm) minimum by 48 inches (*1219* mm) minimum.

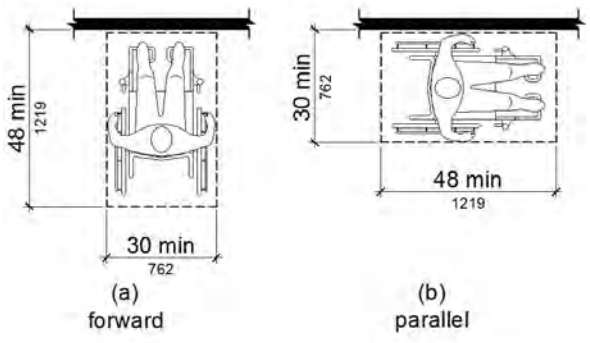
FIGURE *11B*-305.3—CLEAR FLOOR OR GROUND SPACE



***11B*-305.4 Knee and toe clearance.** Unless otherwise specified, clear floor or ground space shall be permitted to include knee and toe clearance complying with *Section 11B*-306.

***11B*-305.5 Position.** Unless otherwise specified, clear floor or ground space shall be positioned for either forward or parallel approach to an element.

FIGURE *11B*-305.5—POSITION OF CLEAR FLOOR OR GROUND SPACE

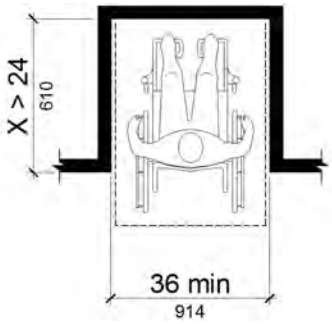


***11B*-305.6 Approach.** One full unobstructed side of the clear floor or ground space shall adjoin an accessible route or adjoin another clear floor or ground space. *Clear floor or ground space may overlap an accessible route, unless specifically prohibited elsewhere in this chapter.*

***11B*-305.7 Maneuvering clearance.** Where a clear floor or ground space is located in an alcove or otherwise confined on all or part of three sides, additional maneuvering clearance shall be provided in accordance with *Sections 11B*-305.7.1 and *11B*-305.7.2.

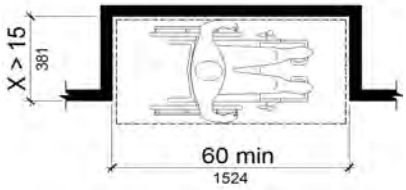
***11B*-305.7.1 Forward approach.** Alcoves shall be 36 inches (*914* mm) wide minimum where the depth exceeds 24 inches (610 mm).

FIGURE *11B*-305.7.1—MANEUVERING CLEARANCE IN AN ALCOVE, FORWARD APPROACH



***11B*-305.7.2 Parallel approach.** Alcoves shall be 60 inches (*1524* mm) wide minimum where the depth exceeds 15 inches (*381* mm).

FIGURE *11B*-305.7.2—MANEUVERING CLEARANCE IN AN ALCOVE, PARALLEL APPROACH



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SECTION 11B-306—KNEE AND TOE CLEARANCE

***11B*-306.1 General.** Where space beneath an element is included as part of clear floor or ground space or turning space, the space shall comply with *Section 11B*-306. Additional space shall not be prohibited beneath an element but shall not be considered as part of the clear floor or ground space or turning space.

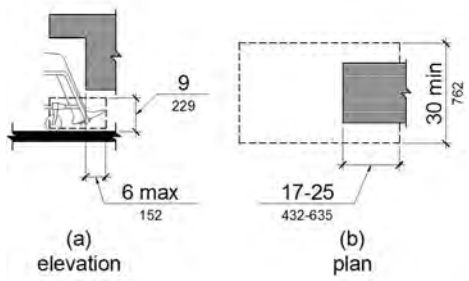
***11B*-306.2—Toe clearance.**

***11B*-306.2.1 General.** Space under an element between the finish floor or ground and 9 inches (*229* mm) above the finish floor or ground shall be considered toe clearance and shall comply with *Section 11B*-306.2.

***11B*-306.2.2 Maximum depth.** Toe clearance shall extend 25 inches (635 mm) maximum under an element.

Exception: *Toe clearance shall extend 19 inches (483 mm) maximum under lavatories required to be accessible by Section 11B-213.3.4.*

FIGURE *11B*-306.2—TOE CLEARANCE



***11B*-306.2.3 Minimum required depth.** Where toe clearance is required at an element as part of a clear floor space, the toe clearance shall extend 17 inches (*432* mm) minimum under the element.

Exceptions:

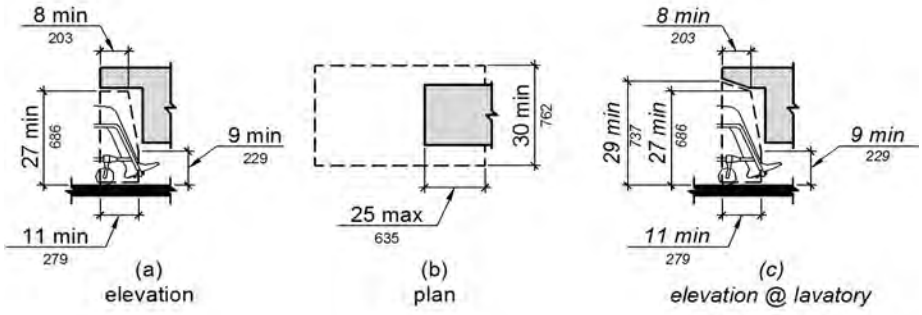
1. *The toe clearance shall extend 19 inches (483 mm) minimum under sinks required to be accessible by Section 11B-212.3.*
2. *The toe clearance shall extend 19 inches (483 mm) minimum under built-in dining and work surfaces required to be accessible.*

***11B*-306.2.4 Additional clearance.** Space extending greater than 6 inches (*152* mm) beyond the available knee clearance at 9 inches (*229* mm) above the finish floor or ground shall not be considered toe clearance.

***11B*-306.2.5 Width.** Toe clearance shall be 30 inches (*762* mm) wide minimum.

***11B*-306.3 Knee clearance.**

FIGURE *11B*-306.3—KNEE CLEARANCE



***11B*-306.3.1 General.** Space under an element between 9 inches (*229* mm) and 27 inches (*686* mm) above the finish floor or ground shall be considered knee clearance and shall comply with *Section 11B*-306.3.

Exception: *At lavatories required to be accessible by Section 11B-213.3.4, space between 9 inches (229 mm) and 29 inches (737 mm) above the finish floor or ground, shall be considered knee clearance.*

***11B*-306.3.2 Maximum depth.** Knee clearance shall extend 25 inches (635 mm) maximum under an element at 9 inches (*229* mm) above the finish floor or ground.

***11B*-306.3.3 Minimum required depth.** Where knee clearance is required under an element as part of a clear floor space, the knee clearance shall be 11 inches (*279* mm) deep minimum at 9 inches (*229* mm) above the finish floor or ground, and 8 inches (*203* mm) deep minimum at 27 inches (*686* mm) above the finish floor or ground.

Exceptions:

1. *At lavatories required to be accessible by Section 11B-213.3.4, the knee clearance shall be 27 inches (686 mm) high minimum above the finish floor or ground at a depth of 8 inches (203 mm) minimum increasing to 29 inches (737 mm) high*

minimum above the finish floor or ground at the front edge of a counter with a built-in lavatory or at the front edge of a wall-mounted lavatory fixture.

2. *At dining and work surfaces required to be accessible, knee clearance shall extend 19 inches (483 mm) deep minimum at 27 inches (686 mm) above the finish floor or ground.*

***11B*-306.3.4 Clearance reduction.** Between 9 inches (*229* mm) and 27 inches (*686* mm) above the finish floor or ground, the knee clearance shall be permitted to reduce at a rate of 1 inch (25 mm) in depth for each 6 inches (152 mm) in height.

Exception: *The knee clearance shall not be reduced at built-in dining and work surfaces required to be accessible by Section 11B-226.1.*

***11B*-306.3.5 Width.** Knee clearance shall be 30 inches (*762* mm) wide minimum.

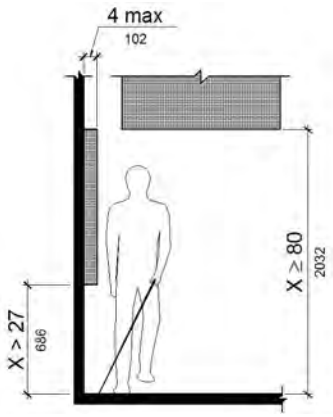
SECTION 11B-307—PROTRUDING OBJECTS

***11B*-307.1 General.** Protruding objects shall comply with *Section 11B*-307.

***11B*-307.2 Protrusion limits.** Objects with leading edges more than 27 inches (*686* mm) and not more than 80 inches (*2032* mm) above the finish floor or ground shall protrude 4 inches (*102* mm) maximum horizontally into the circulation path.

Exception: Handrails shall be permitted to protrude $4^1/_2$ inches (*114* mm) maximum.

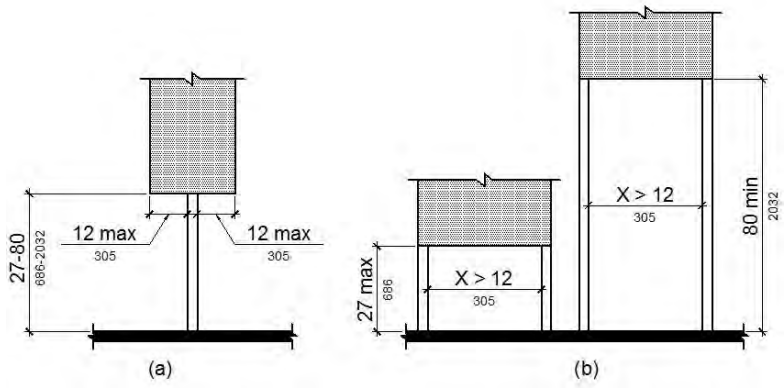
FIGURE *11B*-307.2—LIMITS OF PROTRUDING OBJECTS



***11B*-307.3 Post-mounted objects.** Free-standing objects mounted on posts or pylons shall overhang circulation paths 12 inches (305 mm) maximum when located 27 inches (*686* mm) minimum and 80 inches (*2032* mm) maximum above the finish floor or ground. Where a sign or other obstruction is mounted between posts or pylons and the clear distance between the posts or pylons is greater than 12 inches (305 mm), the lowest edge of such sign or obstruction shall be 27 inches (*686* mm) maximum or 80 inches (*2032* mm) minimum above the finish floor or ground.

Exception: The sloping portions of handrails serving stairs and ramps shall not be required to comply with *Section 11B*-307.3.

FIGURE *11B*-307.3—POST-MOUNTED PROTRUDING OBJECTS



11B-307.3.1 Edges and corners. *Where signs or other objects are mounted on posts or pylons, and their bottom edges are less than 80 inches (2032 mm) above the floor or ground surface, the edges of such signs and objects shall be rounded or eased and the corners shall have a minimum radius of $^1/_8$ inch (3.2 mm).*

***11B*-307.4 Vertical clearance.** Vertical clearance shall be 80 inches (*2032* mm) high minimum. Guardrails or other barriers shall be provided where the vertical clearance is less than 80 inches (*2032* mm) high. The leading edge of such guardrail or barrier shall be located 27 inches (*686* mm) maximum above the finish floor or ground.

Exception: Door closers and door stops shall be permitted to be 78 inches (*1981* mm) minimum above the finish floor or ground.

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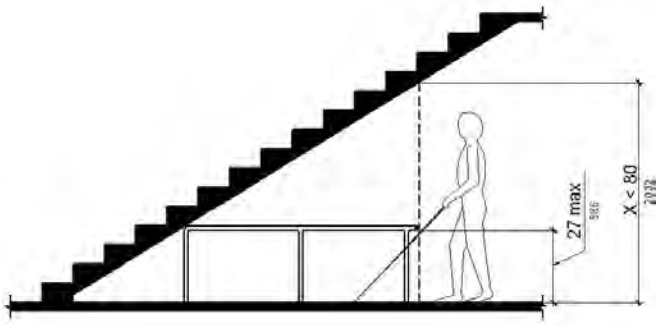
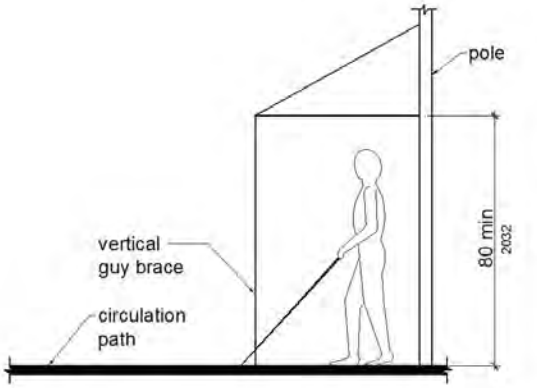
FIGURE *11B*-307.4—VERTICAL CLEARANCE



11B-307.4.1 Guy braces. *Where a guy support is used within either the width of a circulation path or 24 inches (610 mm) maximum outside of a circulation path, a vertical guy brace, sidewalk guy or similar device shall be used to prevent a hazard or an overhead obstruction.*

FIGURE *11B*-307.4.1—GUY BRACES



***11B*-307.5 Required clear width.** Protruding objects shall not reduce the clear width required for accessible routes.

SECTION 11B-308—REACH RANGES

***11B*-308.1 General.** Reach ranges shall comply with *Section 11B*-308*.*

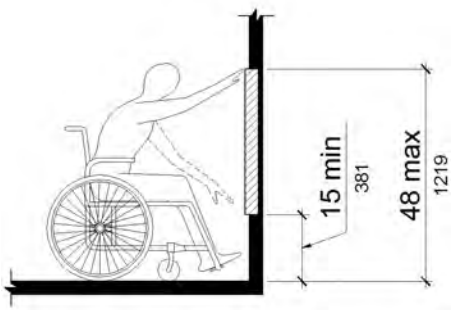
11B-308.1.1 Electrical switches. *Controls and switches intended to be used by the occupant of a room or area to control lighting and receptacle outlets, appliances or cooling, heating and ventilating equipment, shall comply with Section 11B-308 except the low reach shall be measured to the bottom of the outlet box and the high reach shall be measured to the top of the outlet box.*

11B-308.1.2 Electrical receptacle outlets. *Electrical receptacle outlets on branch circuits of 30 amperes or less and communication system receptacles shall comply with Section 11B-308 except the low reach shall be measured to the bottom of the outlet box and the high reach shall be measured to the top of the outlet box.*

***11B*-308.2 Forward reach.**

***11B*-308.2.1 Unobstructed.** Where a forward reach is unobstructed, the high forward reach shall be 48 inches (*1219* mm) maximum and the low forward reach shall be 15 inches (*381* mm) minimum above the finish floor or ground.

FIGURE *11B*-308.2.1—UNOBSTRUCTED FORWARD REACH



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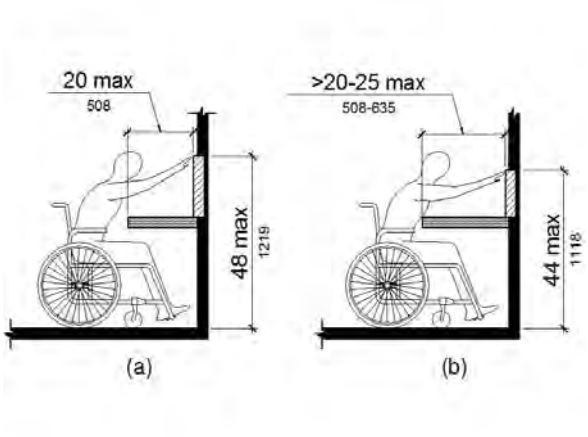
***11B*-308.2.2 Obstructed high reach.** Where a high forward reach is over an obstruction, the clear floor space shall extend beneath the element for a distance not less than the required reach depth over the obstruction. The high forward reach shall be 48 inches (*1219* mm) maximum where the reach depth is 20 inches (*508* mm) maximum. Where the reach depth exceeds 20 inches (*508* mm), the high forward reach shall be 44 inches (*1118* mm) maximum and the reach depth shall be 25 inches (635 mm) maximum.

FIGURE *11B*-308.2.2—OBSTRUCTED HIGH FORWARD REACH



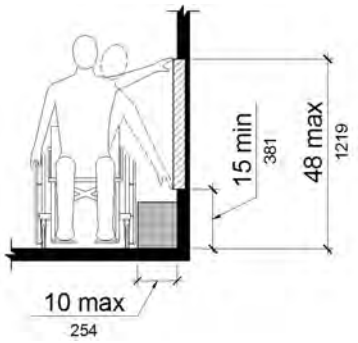
***11B*-308.3 Side reach.**

***11B*-308.3.1 Unobstructed.** Where a clear floor or ground space allows a parallel approach to an element and the side reach is unobstructed, the high side reach shall be 48 inches (*1219* mm) maximum and the low side reach shall be 15 inches (*381* mm) minimum above the finish floor or ground.

Exceptions:

1. An obstruction shall be permitted between the clear floor or ground space and the element where the depth of the obstruction is 10 inches (*254* mm) maximum.
2. Operable parts of fuel dispensers shall be permitted to be 54 inches (*1372* mm) maximum measured from the surface of the vehicular way where fuel dispensers are installed on existing curbs.

FIGURE *11B*-308.3.1—UNOBSTRUCTED SIDE REACH

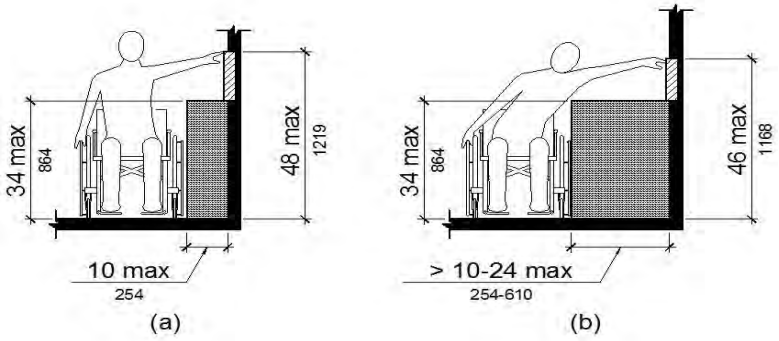


***11B*-308.3.2 Obstructed high reach.** Where a clear floor or ground space allows a parallel approach to an element and the high side reach is over an obstruction, the height of the obstruction shall be 34 inches (*864* mm) maximum and the depth of the obstruction shall be 24 inches (610 mm) maximum. The high side reach shall be 48 inches (*1219* mm) maximum for a reach depth of 10 inches (*254* mm) maximum. Where the reach depth exceeds 10 inches (*254* mm), the high side reach shall be 46 inches (*1168* mm) maximum for a reach depth of 24 inches (*610* mm) maximum.

Exceptions:

1. The top of washing machines and clothes dryers shall be permitted to be 36 inches (*914* mm) maximum above the finish floor.
2. Operable parts of fuel dispensers shall be permitted to be 54 inches (*1372* mm) maximum measured from the surface of the vehicular way where fuel dispensers are installed on existing curbs.

FIGURE *11B*-308.3.2—OBSTRUCTED HIGH SIDE REACH



***11B*-308.4 Suggested reach ranges for children.** Where building elements such as coat hooks, lockers or operable parts are designed for use primarily by children, the suggested dimensions of Table *11B*-308.4 shall be permitted. These dimensions apply to either forward or side reaches.

TABLE 11B-308.4—SUGGESTED DIMENSIONS FOR CHILDREN'S USE			
SUGGESTED REACH RANGES FOR CHILDREN AGES 3 THROUGH 12			
Forward or Side Reach	***Ages 3 and 4***	***Ages 5 through 8***	***Ages 9 through 12***
High (maximum)	*36 inches (914 mm)*	*40 inches (1016 mm)*	*44 inches (1118 mm)*
Low (minimum)	*20 inches (508 mm)*	*18 inches (457 mm)*	*16 inches (406 mm)*

SECTION 11B-309—OPERABLE PARTS

***11B*-309.1 General.** Operable parts shall comply with *Section 11B*-309.

***11B*-309.2 Clear floor space.** A clear floor or ground space complying with *Section 11B*-305 shall be provided.

***11B*-309.3 Height.** Operable parts shall be placed within one or more of the reach ranges specified in *Section 11B*-308.

***11B*-309.4 Operation.** Operable parts shall be operable with one hand and shall not require tight grasping, pinching or twisting of the wrist. The force required to activate operable parts shall be 5 pounds (22.2 N) maximum.

Exception: Gas pump nozzles *and electric vehicle connectors* shall not be required to provide operable parts that have an activating force of 5 pounds (22.2 N) maximum.

DIVISION 4: ACCESSIBLE ROUTES

SECTION 11B-401—GENERAL

***11B*-401.1 Scope.** The provisions of *Division* 4 shall apply where required by *Division* 2 or where referenced by a requirement in this *chapter.*

SECTION 11B-402—ACCESSIBLE ROUTES

***11B*-402.1 General.** Accessible routes shall comply with *11B*-402.

***11B*-402.2 Components.** Accessible routes shall consist of one or more of the following components: walking surfaces with a running slope not steeper than 1:20, doorways, ramps, curb ramps excluding the flared sides, elevators and platform lifts. All components of an accessible route shall comply with the applicable requirements of *Division* 4.

SECTION 11B-403—WALKING SURFACES

***11B*-403.1 General.** Walking surfaces that are a part of an accessible route shall comply with *Section 11B*-403.

***11B*-403.2 Floor or ground surface.** Floor or ground surfaces shall comply with *Section 11B*-302.

***11B*-403.3 Slope.** The running slope of walking surfaces shall not be steeper than 1:20. The cross slope of walking surfaces shall not be steeper than 1:48.

Exception: *The running slope of sidewalks shall not exceed the general grade established for the adjacent street or highway.*

***11B*-403.4 Changes in level.** Changes in level shall comply with *Section 11B*-303.

***11B*-403.5 Clearances.** Walking surfaces shall provide clearances complying with *Section 11B*-403.5.

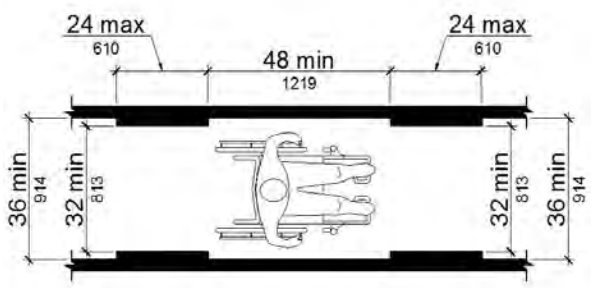
Exception: Within employee work areas, clearances on common use circulation paths shall be permitted to be decreased by work area equipment provided that the decrease is essential to the function of the work being performed.

***11B*-403.5.1 Clear width.** Except as provided in *Sections 11B*-403.5.2 and *11B*-403.5.3, the clear width of walking surfaces shall be 36 inches (*914* mm) minimum.

Exceptions:

1. The clear width shall be permitted to be reduced to 32 inches (*813* mm) minimum for a length of 24 inches (610 mm) maximum provided that reduced width segments are separated by segments that are 48 inches (*1219* mm) long minimum and 36 inches (*914* mm) wide minimum.
2. *The clear width for walking surfaces in corridors serving an occupant load of 10 or more shall be 44 inches (1118 mm) minimum.*
3. *The clear width for sidewalks and walks shall be 48 inches (1219 mm) minimum. When, because of right-of-way restrictions, natural barriers or other existing conditions, the enforcing agency determines that compliance with the 48-inch (1219 mm) clear sidewalk width would create an unreasonable hardship, the clear width may be reduced to 36 inches (914 mm).*
4. *The clear width for aisles shall be 36 inches (914 mm) minimum if serving elements on only one side, and 44 inches (1118 mm) minimum if serving elements on both sides.*
5. *The clear width for accessible routes to accessible toilet compartments shall be 44 inches (1118 mm) except for door-opening widths and door swings.*

FIGURE *11B*-403.5.1—CLEAR WIDTH OF AN ACCESSIBLE ROUTE



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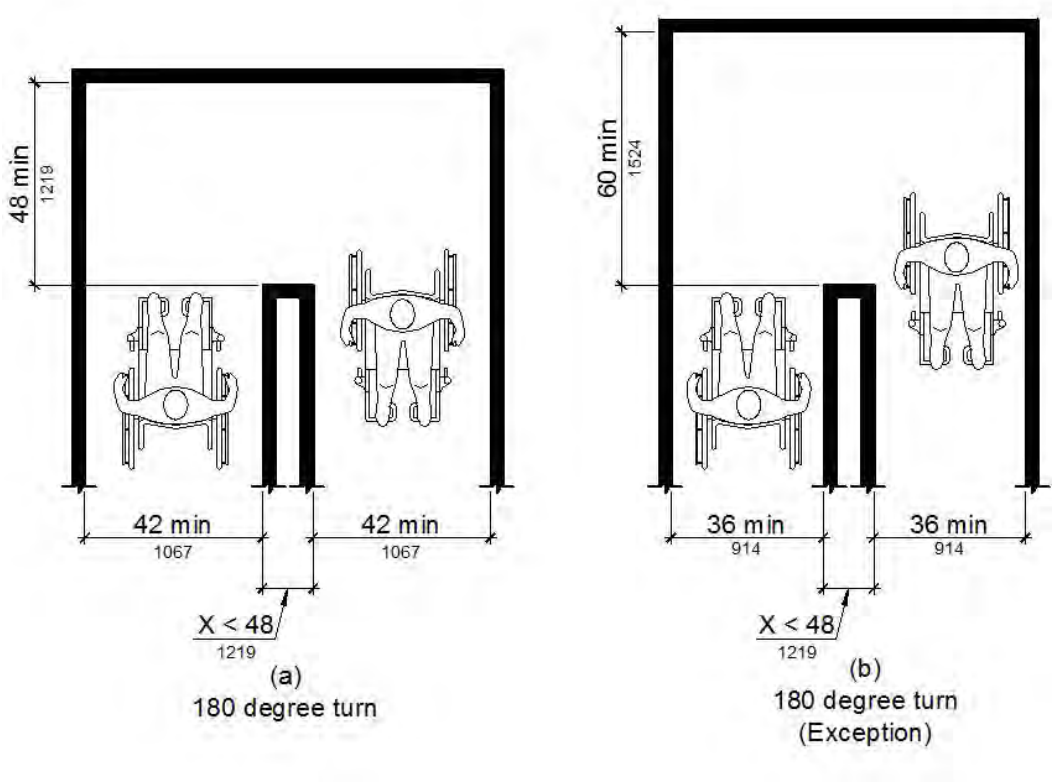
***11B*-403.5.2 Clear width at turn.** Where the accessible route makes a 180 degree turn around an element which is less than 48 inches (*1219* mm) wide, clear width shall be 42 inches (*1067* mm) minimum approaching the turn, 48 inches (*1219* mm) minimum at the turn and 42 inches (*1067* mm) minimum leaving the turn.

Exception: Where the clear width at the turn is 60 inches (*1524* mm) minimum compliance with *Section 11B*-403.5.2 shall not be required.

FIGURE *11B*-403.5.2—CLEAR WIDTH AT TURN



***11B*-403.5.3 Passing spaces.** An accessible route with a clear width less than 60 inches (*1524* mm) shall provide passing spaces at intervals of 200 feet (*60,960* mm) maximum. Passing spaces shall be either: a space 60 inches (*1524* mm) minimum by 60 inches (*1524* mm) minimum; or, an intersection of two walking surfaces providing a T-shaped space complying with *Section 11B*-304.3.2 where the base and arms of the T-shaped space extend 48 inches (*1219* mm) minimum beyond the intersection.

***11B*-403.6 Handrails.** Where handrails are provided along walking surfaces with running slopes not steeper than 1:20 they shall comply with *Section 11B*-505.

11B-403.7 Continuous gradient. *All walks with continuous gradients shall have resting areas, 60 inches (1524 mm) in length, at intervals of 400 feet (121,920 mm) maximum. The resting area shall be at least as wide as the walk. The slope of the resting area in all directions shall be 1:48 maximum.*

SECTION 11B-404—DOORS, DOORWAYS AND GATES

***11B*-404.1 General.** Doors, doorways and gates that are part of an accessible route shall comply with *Section 11B*-404.

Exceptions:

1. Doors, doorways and gates designed to be operated only by security personnel shall not be required to comply with *Sections 11B*-404.2.7, *11B*-404.2.8, *11B*-404.2.9, *11B*-404.3.2 and *11B*-404.3.4 through *11B*-404.3.7. *A sign visible from the approach side complying with Section 11B-703.5 shall be posted stating "Entry restricted and controlled by security personnel".*
2. *At detention and correctional facilities, doors, doorways and gates designed to be operated only by security personnel shall not be required to comply with Sections 11B-404.2.7, 11B-404.2.8, 11B-404.2.9, 11B-404.3.2 and 11B-404.3.4 through 11B-404.3.7.*

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***11B*-404.2 Manual doors, doorways and manual gates.** Manual doors and doorways and manual gates intended for user passage shall comply with *Section 11B*-404.2.

***11B*-404.2.1 Revolving doors, gates and turnstiles.** Revolving doors, revolving gates and turnstiles shall not be part of an accessible route.

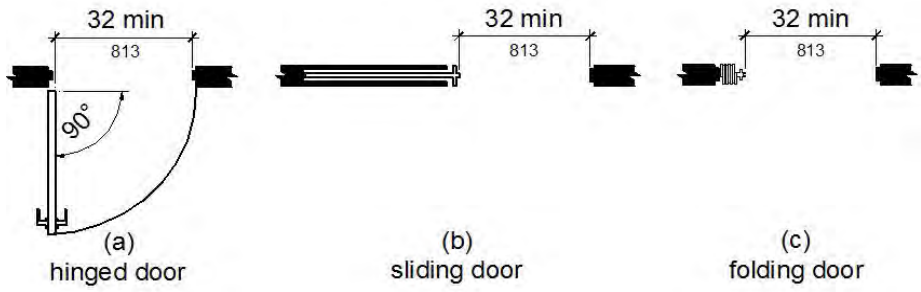
***11B*-404.2.2 Double-leaf doors and gates.** At least one of the active leaves of doorways with two leaves shall comply with *Sections 11B*-404.2.3 and *11B*-404.2.4.

***11B*-404.2.3 Clear width.** Door openings shall provide a clear width of 32 inches (*813* mm) minimum. Clear openings of doorways with swinging doors shall be measured between the face of the door and the stop, with the door open 90 degrees. Openings more than 24 inches (610 mm) deep shall provide a clear opening of 36 inches (*914* mm) minimum. There shall be no projections into the required clear opening width lower than 34 inches (*864* mm) above the finish floor or ground. Projections into the clear opening width between 34 inches (*864* mm) and 80 inches (*2032* mm) above the finish floor or ground shall not exceed 4 inches (*102* mm).

Exceptions:

1. In alterations, a projection of $^{5}/_{8}$ inch (*15.9* mm) maximum into the required clear width shall be permitted for the latch side stop.
2. Door closers and door stops shall be permitted to be 78 inches (*1981* mm) minimum above the finish floor or ground.

FIGURE *11B*-404.2.3—CLEAR WIDTH OF DOORWAYS



***11B*-404.2.4 Maneuvering clearances.** Minimum maneuvering clearances at doors and gates shall comply with *Section 11B*-404.2.4. Maneuvering clearances shall extend the full width of the doorway and the required latch side or hinge side clearance.

Exception: *Reserved.*

11B-404.2.4.1 Swinging doors and gates. Swinging doors and gates shall have maneuvering clearances complying with Table 11B-404.2.4.1.

TABLE *11B*-404.2.4.1—MANEUVERING CLEARANCES AT MANUAL SWINGING DOORS AND GATES

TYPE OF USE		MINIMUM MANEUVERING CLEARANCE	
Approach direction	**Door or gate side**	**Perpendicular to doorway**	**Parallel to doorway (beyond latch side unless noted)**
From front	Pull	60 inches (*1524* mm)	18 inches (*457* mm)[5]
From front	Push	48 inches (*1219* mm)	0 inches (0 mm)[1]
From hinge side	Pull	60 inches (*1524* mm)	36 inches (*914* mm)
From hinge side	Push	*44 inches (1118 mm)*[2]	22 inches (*559* mm)[3]
From latch side	Pull	*60 inches (1524 mm)*	24 inches (610 mm)
From latch side	Push	*44 inches (1118 mm)*[4]	24 inches (610 mm)

1. Add 12 inches (305 mm) if closer and latch are provided.
2. Add *4 inches (102 mm)* if closer and latch are provided.
3. Beyond hinge side.
4. Add *4 inches (102 mm)* if closer is provided.
5. *Add 6 inches (152 mm) at exterior side of exterior doors.*

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FIGURE *11B*-404.2.4.1—MANEUVERING CLEARANCES AT MANUAL SWINGING DOORS AND GATES

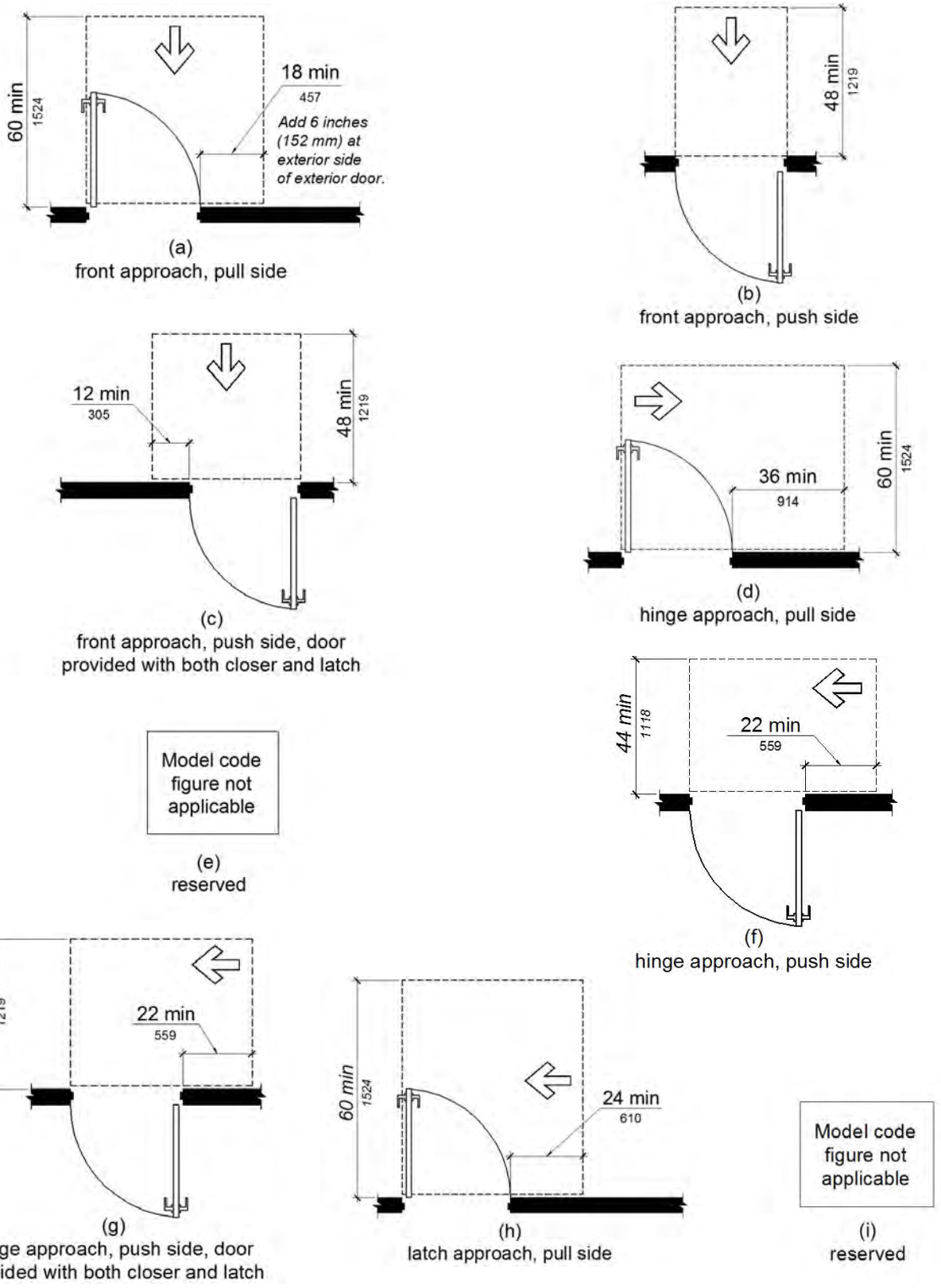

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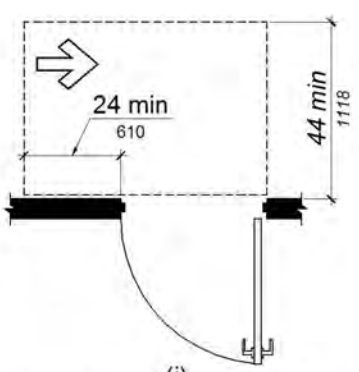
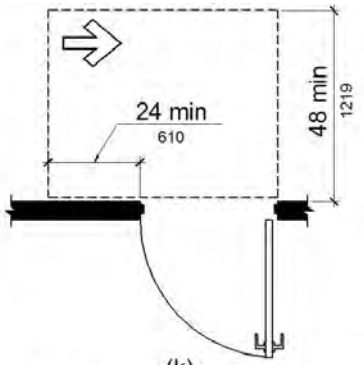
FIGURE *11B*-404.2.4.1—MANEUVERING CLEARANCES AT MANUAL SWINGING DOORS AND GATES—continued



(j)
latch approach, push side



(k)
latch approach, push side, door provided with closer

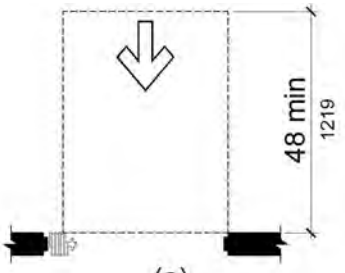
***11B*-404.2.4.2 Doorways without doors or gates, sliding doors and folding doors.** Doorways less than 36 inches (*914* mm) wide without doors or gates, sliding doors or folding doors shall have maneuvering clearances complying with Table *11B*-404.2.4.2.

TABLE *11B*-404.2.4.2—MANEUVERING CLEARANCES AT DOORWAYS WITHOUT DOORS OR GATES, MANUAL SLIDING DOORS and MANUAL FOLDING DOORS

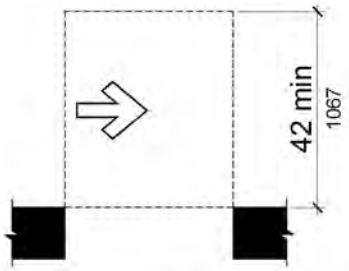
	MINIMUM MANEUVERING CLEARANCE	
Approach direction	**Perpendicular to doorway**	**Parallel to doorway (beyond stop/latch side unless noted)**
From front	48 inches (*1219* mm)	0 inches (0 mm)
From side[1]	42 inches (*1067* mm)	0 inches (0 mm)
From pocket/hinge side	42 inches (*1067* mm)	22 inches (*559* mm)[2]
From stop/latch side	42 inches (*1067* mm)	24 inches (610 mm)

1. Doorway with no door only.
2. Beyond pocket/hinge side.

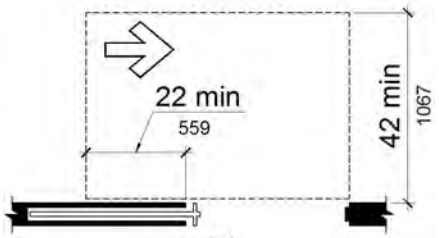
FIGURE *11B*-404.2.4.2—MANEUVERING CLEARANCES AT DOORWAYS WITHOUT DOORS, SLIDING DOORS, GATES and FOLDING DOORS



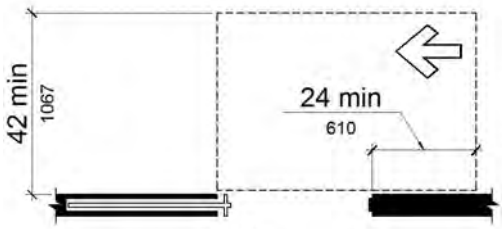
(a)
front approach



(b)
side approach



(c)
pocket or hinge approach



(d)
stop or latch approach

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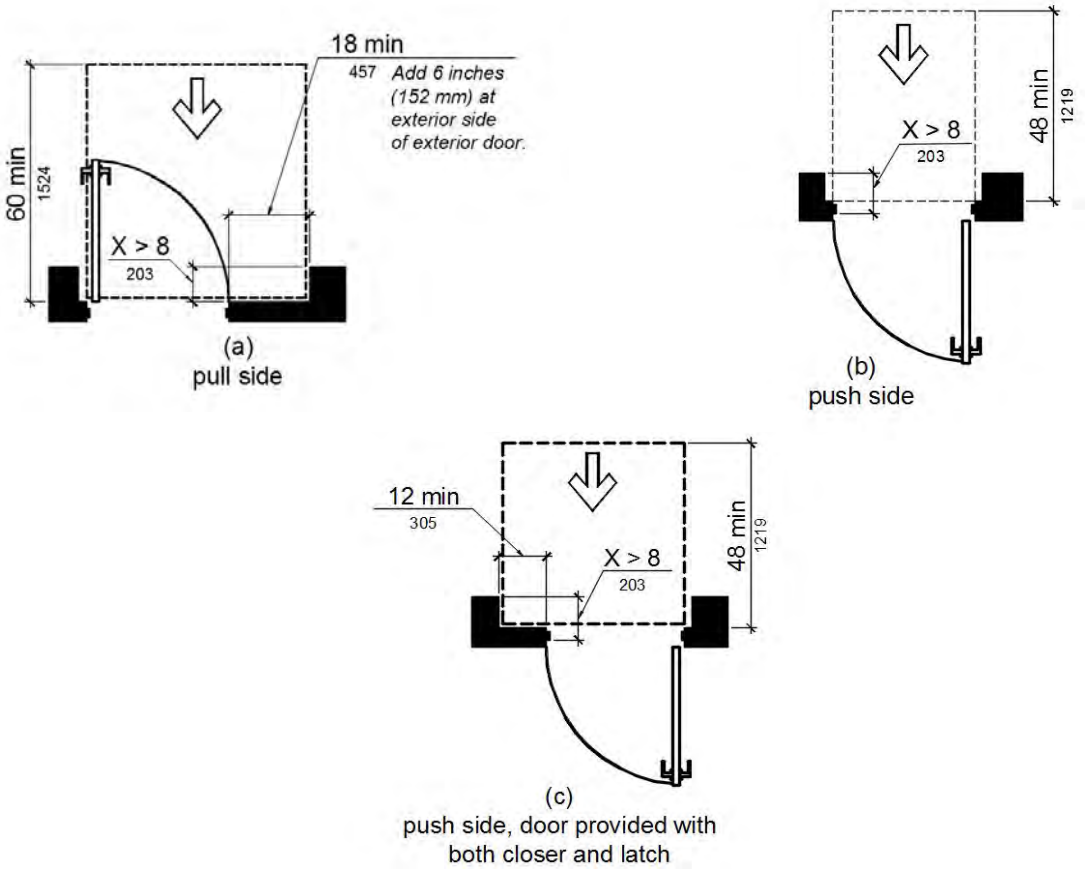
***11B*-404.2.4.3 Recessed doors and gates.** Maneuvering clearances for forward approach shall be provided when any obstruction within 18 inches (*457* mm) of the latch side at *an interior* doorway, *or within 24 inches (610 mm) of the latch side of an exterior doorway,* projects more than 8 inches (*203* mm) beyond the face of the door, measured perpendicular to the face of the door or gate.

FIGURE 11B-404.2.4.3—MANEUVERING CLEARANCES AT RECESSED DOORS AND GATES



***11B*-404.2.4.4 Floor or ground surface.** Floor or ground surface within required maneuvering clearances shall comply with *Section 11B*-302. Changes in level, *slopes exceeding 1:48, and detectable warnings shall not be permitted.*

Exceptions:

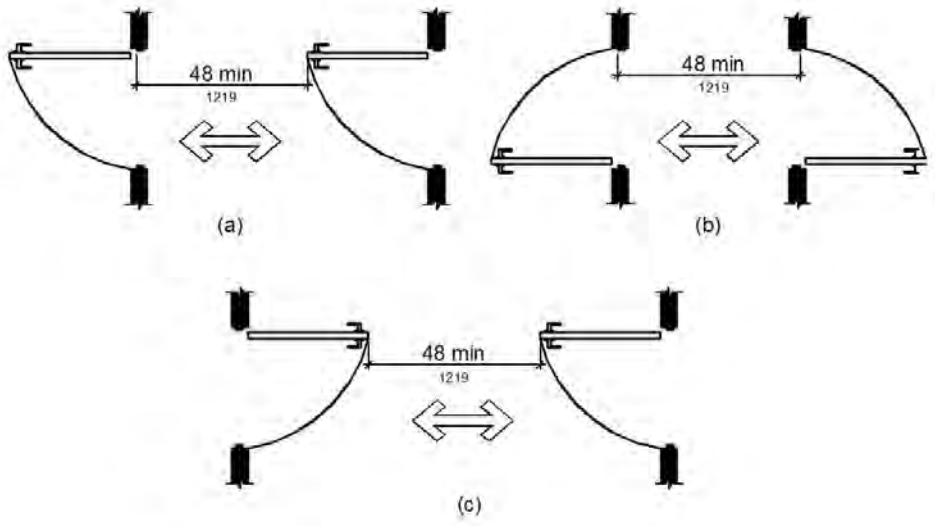
1. *Reserved.*
2. Changes in level at thresholds complying with *Section 11B*-404.2.5 shall be permitted.

***11B*-404.2.5 Thresholds.** Thresholds, if provided at doorways, shall be $^{1}/_{2}$ inch (*12.7* mm) high maximum. Raised thresholds and changes in level at doorways shall comply with *Sections 11B*-302 and *11B*-303.

Exception: *Reserved.*

***11B*-404.2.6 Doors in series and gates in series.** The distance between two hinged or pivoted doors in series and gates in series shall be 48 inches (*1219* mm) minimum plus the width of doors or gates swinging into the space.

FIGURE *11B*-404.2.6—DOORS IN SERIES AND GATES IN SERIES



***11B*-404.2.7 Door and gate hardware.** Handles, pulls, latches, locks and other operable parts on doors and gates shall comply with *Section 11B*-309.4. Operable parts of such hardware shall be 34 inches (*864* mm) minimum and *44 inches (1118 mm)* maximum above the finish floor or ground. Where sliding doors are in the fully open position, operating hardware shall be exposed and usable from both sides.

Exceptions:

1. Existing locks shall be permitted in any location at existing glazed doors without stiles, existing overhead rolling doors or grilles and similar existing doors or grilles that are designed with locks that are activated only at the top or bottom rail.
2. Access gates in barrier walls and fences protecting pools, spas and hot tubs shall be permitted to have operable parts of the release of latch on self-latching devices at 54 inches (*1372* mm) maximum above the finish floor or ground provided the self-latching devices are not also self-locking devices and operated by means of a key, electronic opener or integral combination lock.

***11B*-404.2.8 Closing speed.** Door and gate closing speed shall comply with *Section 11B*-404.2.8.

***11B*-404.2.8.1 Door closers and gate closers.** Door closers and gate closers shall be adjusted so that from an open position of 90 degrees, the time required to move the door to a position of 12 degrees from the latch is 5 seconds minimum.

***11B*-404.2.8.2 Spring hinges.** Door and gate spring hinges shall be adjusted so that from the open position of 70 degrees, the door or gate shall move to the closed position in 1.5 seconds minimum.

***11B*-404.2.9 Door and gate opening force.** The force for pushing or pulling open a door or gate shall be as follows:

1. Interior hinged doors and gates: 5 pounds (22.2 N) maximum.
2. Sliding or folding doors: 5 pounds (22.2 N) maximum.
3. *Required fire doors: the minimum opening force allowable by the appropriate administrative authority, not to exceed 15 pounds (66.7 N).*
4. *Exterior hinged doors: 5 pounds (22.2 N) maximum.*

These forces do not apply to the force required to retract latch bolts or disengage other devices that hold the door or gate in a closed position.

***Exception:** When, at a single location, one of every eight exterior door leafs, or fraction of eight, is a powered door, other exterior doors at the same location, serving the same interior space, may have a maximum opening force of 8.5 pounds (37.8 N). The powered leaf(s) shall be located closest to the accessible route.*

a. Powered doors shall comply with Section 11B-404.3. Powered doors shall be fully automatic doors complying with Builders Hardware Manufacturers' Association (BHMA) A156.10 or low energy operated doors complying with BHMA A156.19.

b. Powered doors serving a building or facility with an occupancy of 150 or more shall be provided with a back-up battery or back-up generator. The back-up power source shall be able to cycle the door a minimum of 100 cycles.

c. Powered doors shall be controlled on both the interior and exterior sides of the doors by sensing devices, push plates, vertical actuation bars or other similar operating devices complying with Section 11B-309.

At each location where push plates are provided there shall be two push plates; the centerline of one push plate shall be 7 inches (178 mm) minimum and 8 inches (203 mm) maximum above the floor or ground surface and the centerline of the second push plate shall be 30 inches (762 mm) minimum and 44 inches (1118 mm) maximum above

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the floor or ground surface. Each push plate shall be a minimum of 4 inches (102 mm) diameter or a minimum of 4 inches by 4 inches (102 mm by 102 mm) square and shall display the International Symbol of Accessibility complying with Section 11B-703.7.

At each location where vertical actuation bars are provided the operable portion shall be located so the bottom is 5 inches (127 mm) maximum above the floor or ground surface and the top is 35 inches (889 mm) minimum above the floor or ground surface. The operable portion of each vertical actuation bar shall be a minimum of 2 inches (51 mm) wide and shall display the International Symbol of Accessibility complying with Section 11B-703.7.

Where push plates, vertical actuation bars or other similar operating devices are provided, they shall be placed in a conspicuous location. A level and clear floor or ground space for forward or parallel approach complying with Section 11B-305 shall be provided, centered on the operating device. Doors shall not swing into the required clear floor or ground space.

d. Signs identifying the accessible entrance required by Section 11B-216.6 shall be placed on, or immediately adjacent to, each powered door. Signs shall be provided in compliance with BHMA A156.10 or BHMA A156.19, as applicable.

e. In addition to the requirements of Item d, where a powered door is provided in buildings or facilities containing assembly occupancies of 300 or more, a sign displaying the International Symbol of Accessibility measuring 6 inches by 6 inches (152 mm by 152 mm), complying with Section 11B-703.7, shall be provided above the door on both the interior and exterior sides of each powered door.

***11B*-404.2.10 Door and gate surfaces.** Swinging door and gate surfaces within 10 inches (*254* mm) of the finish floor or ground measured vertically shall have a smooth surface on the push side extending the full width of the door or gate. Parts creating horizontal or vertical joints in these surfaces shall be within $^{1}/_{16}$ inch (1.6 mm) of the same plane as the other *and be free of sharp or abrasive edges.* Cavities created by added kick plates shall be capped.

Exceptions:

1. Sliding doors shall not be required to comply with *Section 11B*-404.2.10.
2. Tempered glass doors without stiles and having a bottom rail or shoe with the top leading edge tapered at 60 degrees minimum from the horizontal shall not be required to meet the 10 inch (*254* mm) bottom smooth surface height requirement.
3. Doors and gates that do not extend to within 10 inches (*254* mm) of the finish floor or ground shall not be required to comply with *Section 11B*-404.2.10.
4. ***Reserved.***

***11B*-404.2.11 Vision lights.** Doors, gates and side lights adjacent to doors or gates, containing one or more glazing panels that permit viewing through the panels shall have the bottom of at least one glazed panel located 43 inches (*1092* mm) maximum above the finish floor.

Exception: *Glazing panels* with the lowest part more than 66 inches (*1676* mm) from the finish floor or ground shall not be required to comply with *Section 11B*-404.2.11.

***11B*-404.3 Automatic and power-assisted doors and gates.** Automatic doors and automatic gates shall comply with *Section 11B*-404.3. Full-powered automatic doors shall comply with ANSI/BHMA A156.10. Low-energy and power-assisted doors shall comply with ANSI/BHMA A156.19.

***11B*-404.3.1 Clear width.** Doorways shall provide a clear opening of 32 inches (*813* mm) minimum in power-on and power-off mode. The minimum clear width for automatic door systems in a doorway *shall provide a clear, unobstructed opening of 32 inches (813 mm) with one leaf positioned at an angle of 90 degrees from its closed position.*

***11B*-404.3.2 Maneuvering clearance.** Clearances at power-assisted doors and gates shall comply with *Section 11B*-404.2.4. Clearances at automatic doors and gates without standby power and serving an accessible means of egress shall comply with *Section 11B*-404.2.4.

Exception: Where automatic doors and gates remain open in the power-off condition, compliance with *Section 11B*-404.2.4 shall not be required.

***11B*-404.3.3 Thresholds.** Thresholds and changes in level at doorways shall comply with *Section 11B*-404.2.5.

***11B*-404.3.4 Doors in series and gates in series.** Doors in series and gates in series shall comply with *Section 11B*-404.2.6.

***11B*-404.3.5 Controls.** Manually operated controls shall comply with *Section 11B*-309. The clear floor space adjacent to the control shall be located beyond the arc of the door swing.

***11B*-404.3.6 Break out opening.** Where doors and gates without standby power are a part of a means of egress, the clear break out opening at swinging or sliding doors and gates shall be 32 inches (*813* mm) minimum when operated in emergency mode.

Exception: Where manual swinging doors and gates comply with *Section 11B*-404.2 and serve the same means of egress compliance with *Section 11B*-404.3.6 shall not be required.

***11B*-404.3.7 Revolving doors, revolving gates and turnstiles.** Revolving doors, revolving gates and turnstiles shall not be part of an accessible route.

SECTION 11B-405—RAMPS

***11B*-405.1 General.** Ramps on accessible routes shall comply with *Section 11B*-405.

Exception: In assembly areas, aisle ramps adjacent to seating and not serving elements required to be on an accessible route shall not be required to comply with *Section 11B*-405.

***11B*-405.2 Slope.** Ramp runs shall have a running slope not steeper than 1:12.

Exception: ***Reserved.***

***11B*-405.3 Cross slope.** Cross slope of ramp runs shall not be steeper than 1:48.

***11B*-405.4 Floor or ground surfaces.** Floor or ground surfaces of ramp runs shall comply with *Section 11B*-302. Changes in level other than the running slope and cross slope are not permitted on ramp runs.

***11B*-405.5 Clear width.** The clear width of a ramp run *shall be 48 inches (1219 mm)* minimum.

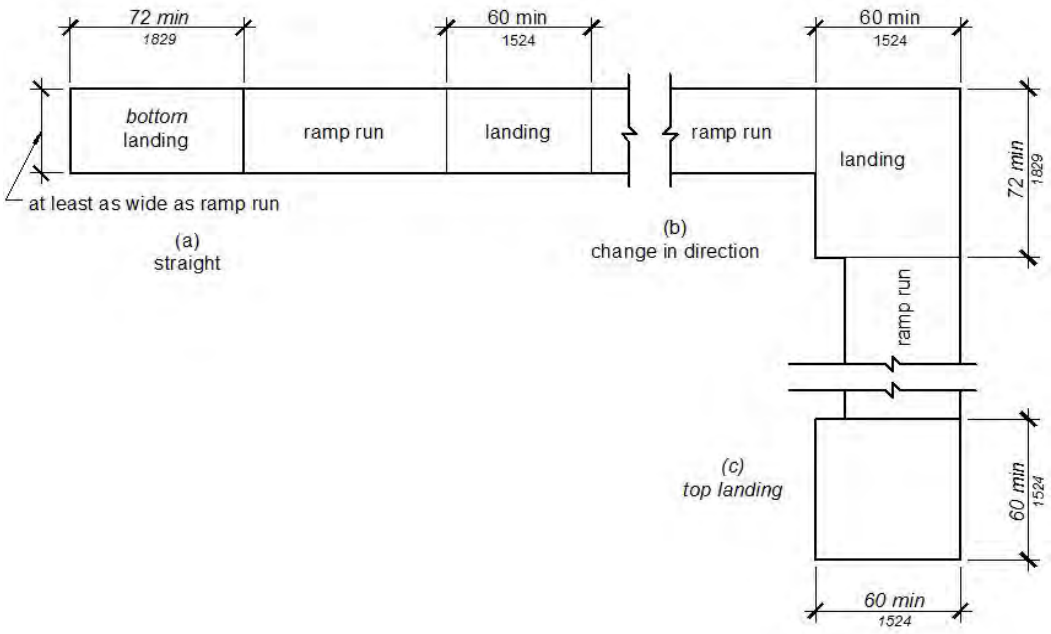
Exceptions:

1. Within employee work areas, the required clear width of ramps that are a part of common use circulation paths shall be permitted to be decreased by work area equipment provided that the decrease is essential to the function of the work being performed.
2. *Handrails may project into the required clear width of the ramp at each side $3^1/_2$ inches (89 mm) maximum at the handrail height.*
3. *The clear width of ramps in residential uses serving an occupant load of fifty or less shall be 36 inches (914 mm) minimum between handrails.*

***11B*-405.6 Rise.** The rise for any ramp run shall be 30 inches (*762* mm) maximum.

***11B*-405.7 Landings.** Ramps shall have landings at the top and the bottom of each ramp run. Landings shall comply with *Section 11B*-405.7.

FIGURE *11B*-405.7—RAMP LANDINGS



***11B*-405.7.1 Slope.** Landings shall comply with *Section 11B*-302. Changes in level, *slopes exceeding 1:48, and detectable warnings shall not be permitted.*

Exception: *Reserved.*

***11B*-405.7.2 Width.** The landing clear width shall be at least as wide as the widest ramp run leading to the landing.

11B-405.7.2.1: *Top landings shall be 60 inches (1524 mm) wide minimum.*

***11B*-405.7.3 Length.** The landing clear length shall be 60 inches (1524 mm) long minimum.

11B-405.7.3.1: *Bottom landings shall extend 72 inches (1829 mm) minimum in the direction of ramp run.*

***11B*-405.7.4 Change in direction.** Ramps that change direction between runs at landings shall have a clear landing 60 inches (1525 mm) minimum by *72 inches (1829 mm)* minimum *in the direction of downward travel from the upper ramp run.*

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***11B*-405.7.5 Doorways.** Where doorways are located adjacent to a ramp landing, maneuvering clearances required by *Sections 11B*-404.2.4 and *11B*-404.3.2 shall be permitted to overlap the required landing area. *Doors, when fully open, shall not reduce the required ramp landing width by more than 3 inches (76 mm). Doors, in any position, shall not reduce the minimum dimension of the ramp landing to less than 42 inches (1067 mm).*

***11B*-405.8 Handrails.** Ramp runs shall have handrails complying with *Section 11B*-505.

Exceptions:

1. ***Reserved.***
2. ***Reserved.***
3. *Curb ramps do not require handrails.*
4. *At door landings, handrails are not required on ramp runs less than 6 inches (152 mm) in rise or 72 inches (1829 mm) in length.*

***11B*-405.9 Edge protection.** Edge protection complying with *Section 11B*-405.9.2 shall be provided on each side of ramp runs and at each side of ramp landings.

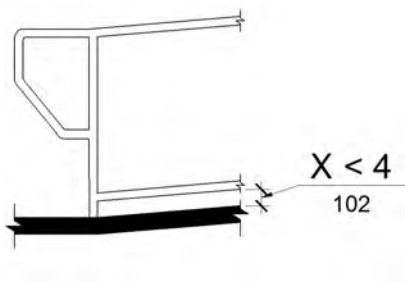
Exceptions:

1. Edge protection shall not be required on ramps that are not required to have handrails and have sides complying with *Section 11B*-406.2.2.
2. Edge protection shall not be required on the sides of ramp landings serving an adjoining ramp run or stairway.
3. Edge protection shall not be required on the sides of ramp landings having a vertical drop-off of $^{1}/_{2}$ inch (*12.7* mm) maximum within 10 inches (*254* mm) horizontally of the minimum landing area specified in *Section 11B*-405.7.

11B*-405.9.1 *Reserved.

***11B*-405.9.2 Curb or barrier.** A curb or barrier shall be provided that prevents the passage of a 4-inch (*102* mm) diameter sphere, where any portion of the sphere is within 4 inches (*102* mm) of the finish floor or ground surface. *To prevent wheel entrapment, the curb or barrier shall provide a continuous and uninterrupted barrier along the length of the ramp.*

FIGURE *11B*-405.9.2—CURB OR BARRIER EDGE PROTECTION



***11B*-405.10 Wet conditions.** Landings subject to wet conditions shall be designed to prevent the accumulation of water.

SECTION 11B-406—*CURB RAMPS, BLENDED TRANSITIONS AND ISLANDS*

11B-406.1 General. *Curb ramps, blended transitions and islands on accessible routes shall comply with Section 11B-406. Curb ramps may be perpendicular, parallel, or a combination of perpendicular and parallel.*

11B-406.1.1 Perpendicular curb ramps. *Perpendicular curb ramps shall comply with Section 11B-406.2.*

11B-406.1.2 Parallel curb ramps. *Parallel curb ramps shall comply with Section 11B-406.3.*

11B-406.1.3 Blended transitions. *Blended transitions shall comply with Section 11B-406.4.*

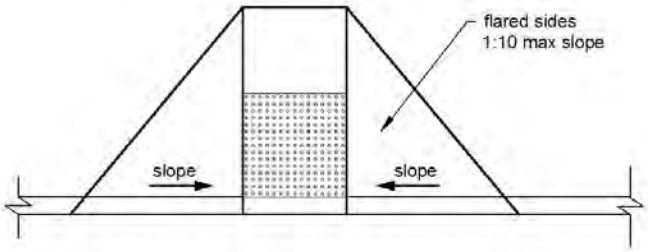
11B-406.1.4 Islands. *Islands shall comply with Section 11B-406.6.*

11B-406.2 Perpendicular curb ramps. *Perpendicular curb ramps shall comply with Sections 11B-406.2 and 11B-406.5.*

11B-406.2.1 Slope. *Ramp runs shall have a running slope not steeper than 1:12.*

11B-406.2.2 Sides of curb ramps. *Where provided, curb ramp flares shall not be steeper than 1:10.*

FIGURE 11B-406.2.2—SIDES OF CURB RAMPS

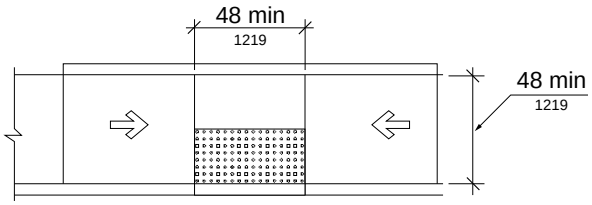


11B-406.3 Parallel curb ramps. *Parallel curb ramps shall comply with Sections 11B-406.3 and 11B-406.5. A parallel curb ramp may be provided with one sloping segment or two opposing sloping segments.*

11B-406.3.1 Slope. *The running slope of the curb ramp segments shall be in-line with the direction of sidewalk travel. Ramp runs shall have a running slope not steeper than 1:12.*

11B-406.3.2 Turning space. *A turning space 48 inches (1219 mm) minimum by 48 inches (1219 mm) minimum shall be provided at the bottom of the curb ramp. The slope of the turning space in all directions shall be 1:48 maximum.*

FIGURE 11B-406.3.2—PARALLEL CURB RAMPS



11B-406.4 Blended transitions. *Blended transitions shall comply with Sections 11B-406.4 and 11B-406.5.*

11B-406.4.1 Slope. *Blended transitions shall have a running slope not steeper than 1:20.*

11B-406.5 Common requirements. *Curb ramps and blended transitions shall comply with Section 11B-406.5.*

11B-406.5.1 Location. *Curb ramps and the flared sides of curb ramps shall be located so that they do not project into vehicular traffic lanes, parking spaces or parking access aisles. Curb ramps at marked crossings shall be wholly contained within the markings, excluding any flared sides.*

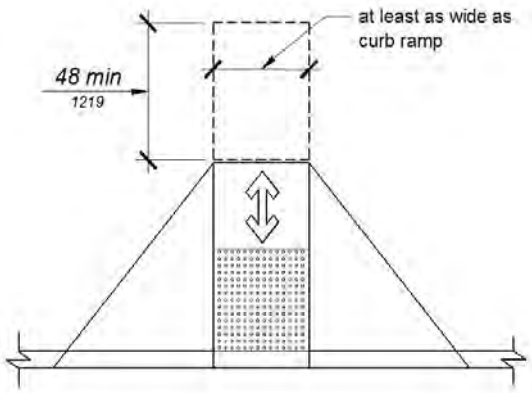
Exception: *Diagonal curb ramps shall comply with Section 11B-406.5.9.*

11B-406.5.2 Width. *The clear width of curb ramp runs (excluding any flared sides), blended transitions, and turning spaces shall be 48 inches (1219 mm) minimum.*

11B-406.5.3 Landings. *Landings shall be provided at the tops of curb ramps and blended transitions. The landing clear length shall be 48 inches (1219 mm) minimum. The landing clear width shall be at least as wide as the curb ramp, excluding any flared sides, or the blended transition leading to the landing. The slope of the landing in all directions shall be 1:48 maximum.*

Exception: *Parallel curb ramps shall not be required to comply with Section 11B-406.5.3.*

FIGURE *11B*-406.5.3—LANDINGS AT THE TOP OF CURB RAMPS



11B-406.5.4 Floor or ground surfaces. *Floor or ground surfaces of curb ramps and blended transitions shall comply with Section 11B-405.4.*

11B-406.5.5 Wet conditions. *Curb ramps and blended transitions shall comply with Section 11B-405.10.*

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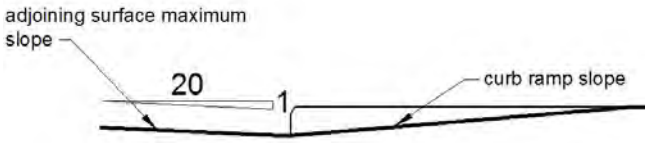
11B-406.5.6 Grade breaks. *Grade breaks at the top and bottom of curb ramp runs shall be perpendicular to the direction of the ramp run. Grade breaks shall not be permitted on the surface of ramp runs and turning spaces. Surface slopes that meet at grade breaks shall be flush.*

11B-406.5.7 Cross slope. *The cross slope of curb ramps and blended transitions shall be 1:48 maximum.*

11B-406.5.8 Counter slope. *Counter slopes of adjoining gutters and road surfaces immediately adjacent to and within 24 inches (610 mm) of the curb ramp shall not be steeper than 1:20. The adjacent surfaces at transitions at curb ramps to walks, gutters and streets shall be at the same level.*

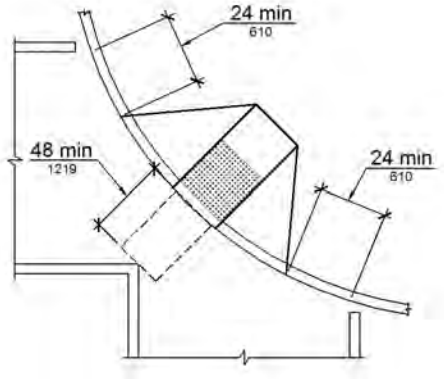
FIGURE *11B-406.5.8*—COUNTER SLOPE OF SURFACES ADJACENT TO CURB RAMPS



11B-406.5.9 Clear space at diagonal curb ramps. *The bottom of diagonal curb ramps shall have a clear space 48 inches (1219 mm) minimum outside active traffic lanes of the roadway. Diagonal curb ramps provided at marked crossings shall provide the 48 inches (1219 mm) minimum clear space within the markings.*

11B-406.5.10 Diagonal curb ramps. *Diagonal or corner type curb ramps are perpendicular or parallel curb ramps that are oriented diagonally at an intersection. Diagonal or corner type curb ramps with returned curbs or other well-defined edges shall have the edges parallel to the direction of pedestrian flow. Diagonal curb ramps with flared sides shall have a segment of curb 24 inches (610 mm) long minimum located on each side of the curb ramp and within the marked crossing.*

FIGURE *11B*-406.5.10—DIAGONAL OR CORNER TYPE CURB RAMPS

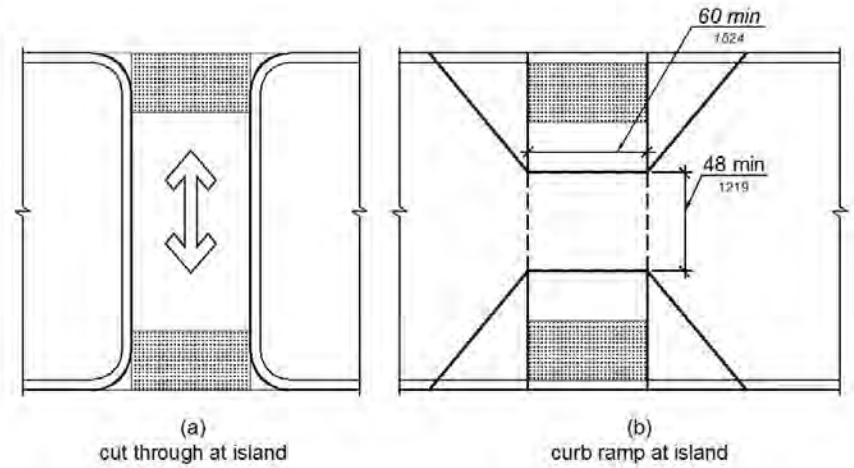


11B-406.5.11 Reserved.

11B-406.5.12 Detectable warnings. *Curb ramps and blended transitions shall have detectable warnings complying with Section 11B-705.*

11B-406.6 Islands. *Raised islands in crossings shall be cut through level with the street or have curb ramps at both sides. The clear width of the accessible route at islands shall be 60 inches (1524 mm) wide minimum. Where curb ramps are provided, they shall comply with Section 11B-406. Landings complying with Section 11B-406.5.3 and the accessible route shall be permitted to overlap. Islands shall have detectable warnings complying with Section 11B-705.*

FIGURE 11B-406.6—ISLANDS IN CROSSINGS



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SECTION 11B-407—ELEVATORS

***11B*-407.1 General.** Elevators shall comply with *Section 11B*-407 and with ASME A17.1 They shall be passenger elevators as classified by ASME A17.1. Elevator operation shall be automatic.

***11B*-407.1.1 Combined passenger and freight elevators.** *When the only elevators provided for use by the public and employees are combination passenger and freight elevators, they shall comply with Section 11B-407 and with ASME A17.1.*

***11B*-407.2 Elevator landing requirements.** Elevator landings shall comply with *Section 11B*-407.2.

***11B*-407.2.1 Call controls.** Where elevator call buttons or keypads are provided, they shall comply with *Sections 11B*-407.2.1 and *11B*-309.4.

Exception: ***Reserved.***

***11B*-407.2.1.1 Height.** Call buttons and keypads shall be located within one of the reach ranges specified in *Section 11B*-308, measured to the centerline of the highest operable part.

Exception: ***Reserved.***

***11B*-407.2.1.2 Size *and shape*.** Call buttons shall *have square shoulders,* be $^{3}/_{4}$ inch (*19.1* mm) minimum in the smallest dimension *and shall be raised $^{1}/_{8}$ inch (3.2 mm) plus or minus $^{1}/_{32}$ inch (0.8 mm) above the surrounding surface. The buttons shall be activated by a mechanical motion that is detectable.*

Exception: ***Reserved.***

***11B*-407.2.1.3 Clear floor or ground space.** A clear floor or ground space complying with *Section 11B*-305 shall be provided at call controls.

***11B*-407.2.1.4 Location.** The call button that designates the up direction shall be located above the call button that designates the down direction.

Exception: ***Reserved.***

***11B*-407.2.1.5 Signals.** Call buttons shall have visible signals *that will activate* when each call is registered and *will extinguish* when each call is answered. *Call buttons shall be internally illuminated with a white light over the entire surface of the button.*

Exceptions:

1. ***Reserved.***
2. ***Reserved.***

***11B*-407.2.1.6 Keypads.** Where keypads are provided, keypads shall be in a standard telephone keypad arrangement and shall comply with *Section 11B*-407.4.7.2.

***11B*-407.2.2 Hall signals.** Hall signals, including in-car signals, shall comply with *Section 11B*-407.2.2.

***11B*-407.2.2.1 Visible and audible signals.** A visible and audible signal shall be provided at each hoistway entrance to indicate which car is answering a call and the car's direction of travel. Where in-car signals are provided, they shall be visible from the floor area adjacent to the hall call buttons.

Exceptions:

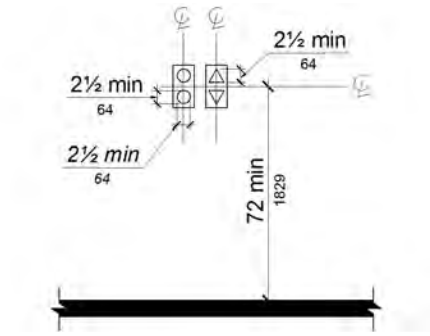
1. ***Reserved.***
2. ***Reserved.***

***11B*-407.2.2.2 Visible signals.** Visible signal fixtures shall be centered at 72 inches (*1829* mm) minimum above the finish floor or ground. The visible signal elements shall be a minimum $2^{1}/_{2}$ inches (64 mm) *high by $2^{1}/_{2}$ inches (64 mm) wide.* Signals shall be visible from the floor area adjacent to the hall call button.

Exceptions:

1. ***Reserved.***
2. ***Reserved.***

FIGURE *11B*-407.2.2.2—VISIBLE HALL SIGNALS



***11B*-407.2.2.3 Audible signals.** Audible signals shall sound once for the up direction and twice for the down direction, or shall have verbal annunciators that indicate the direction of elevator car travel. Audible signals shall have a frequency of 1500 Hz

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maximum. Verbal annunciators shall have a frequency of 300 Hz minimum and 3000 Hz maximum. The audible signal and verbal annunciator shall be 10 dB minimum above ambient, but shall not exceed 80 dB, measured at the hall call button.

Exceptions:

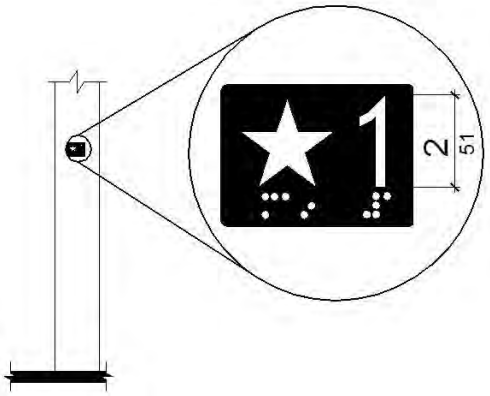
1. ***Reserved.***
2. ***Reserved.***

11B*-407.2.2.4 *Reserved.

***11B*-407.2.3 Hoistway signs.** Signs at elevator hoistways shall comply with *Section 11B*-407.2.3.

***11B*-407.2.3.1 Floor designation.** Floor designations complying with *Sections 11B*-703.2 and *11B*-703.4.1 shall be provided on both jambs of elevator hoistway entrances. Floor designations shall be provided in both *raised* characters and Braille. *Raised* characters shall be 2 inches (51 mm) high. A *raised* star, *placed to the left of the floor designation,* shall be provided on both jambs at the main entry level. *The outside diameter of the star shall be 2 inches (51 mm) and all points shall be of equal length. Raised characters, including the star, shall be white on a black background. Braille complying with Section 11B-703.3 shall be placed below the corresponding raised characters and the star. The Braille translation for the star shall be "MAIN". Applied plates are acceptable if they are permanently fixed to the jamb.*

FIGURE 11B-407.2.3.1—FLOOR DESIGNATIONS ON JAMBS OF ELEVATOR HOISTWAY ENTRANCES



11B*-407.2.3.2 *Reserved.

***11B*-407.3 Elevator door requirements.** Hoistway and car doors shall comply with *Section 11B*-407.3.

***11B*-407.3.1 Type.** Elevator doors shall be the horizontal sliding type. Car gates shall be prohibited.

***11B*-407.3.2 Operation.** Elevator hoistway and car doors shall open and close automatically.

Exception: Existing manually operated hoistway swing doors shall be permitted provided that they comply with *Sections 11B*-404.2.3 and *11B*-404.2.9. Car door closing shall not be initiated until the hoistway door is closed.

***11B*-407.3.3 Reopening device.** Elevator doors shall be provided with a reopening device complying with *Section 11B*-407.3.3 that shall stop and reopen a car door and hoistway door automatically if the door becomes obstructed by an object or person.

Exception: Existing elevators with manually operated doors shall not be required to comply with *Section 11B*-407.3.3.

***11B*-407.3.3.1 Height.** The device shall be activated by sensing an obstruction passing through the opening at 5 inches (*127* mm) nominal and 29 inches (*737* mm) nominal above the finish floor.

***11B*-407.3.3.2 Contact.** The device shall not require physical contact to be activated, although contact is permitted to occur before the door reverses.

***11B*-407.3.3.3 Duration.** Door reopening devices shall remain effective for 20 seconds minimum.

***11B*-407.3.4 Door and signal timing.** The minimum acceptable time from notification that a car is answering a call until the doors of that car start to close shall be calculated from the following equation:

$T = D/(1.5 \text{ ft/s})$ or $T = D/(457 \text{ mm/s})$ = 5 seconds minimum where *T* equals the total time in seconds and *D* equals the distance (in feet or millimeters) from the point in the lobby or corridor 60 inches (*1524* mm) directly in front of the farthest call button controlling that car to the centerline of its hoistway door.

Exceptions:

1. For cars with in-car lanterns, T shall be permitted to begin when the signal is visible from the point 60 inches (*1524* mm) directly in front of the farthest hall call button and the audible signal is sounded.
2. ***Reserved.***

***11B*-407.3.5 Door delay.** Elevator doors shall remain fully open in response to a car call for 5 seconds minimum.

***11B*-407.3.6 Width.** The width of elevator doors shall comply with Table *11B*-407.4.1.

Exception: In existing elevators, a power-operated car door complying with *Section 11B*-404.2.3 shall be permitted.

***11B*-407.4 Elevator car requirements.** Elevator cars shall comply with *Section 11B*-407.4.

***11B*-407.4.1 Car dimensions.** Inside dimensions of elevator cars and clear width of elevator doors shall comply with Table *11B*-407.4.1.

Exception: *In existing buildings, where existing shaft configuration prohibits strict compliance with Section 11B-407.4.1, existing* elevator car configurations that provide a clear floor area of *18 square feet (1.67 m²)* minimum and also provide an inside clear depth 54 inches *(1372* mm*)* minimum and a clear width *48 inches (1219* mm*)* minimum shall be permitted.

FIGURE *11B*-407.4.1—ELEVATOR CAR DIMENSIONS

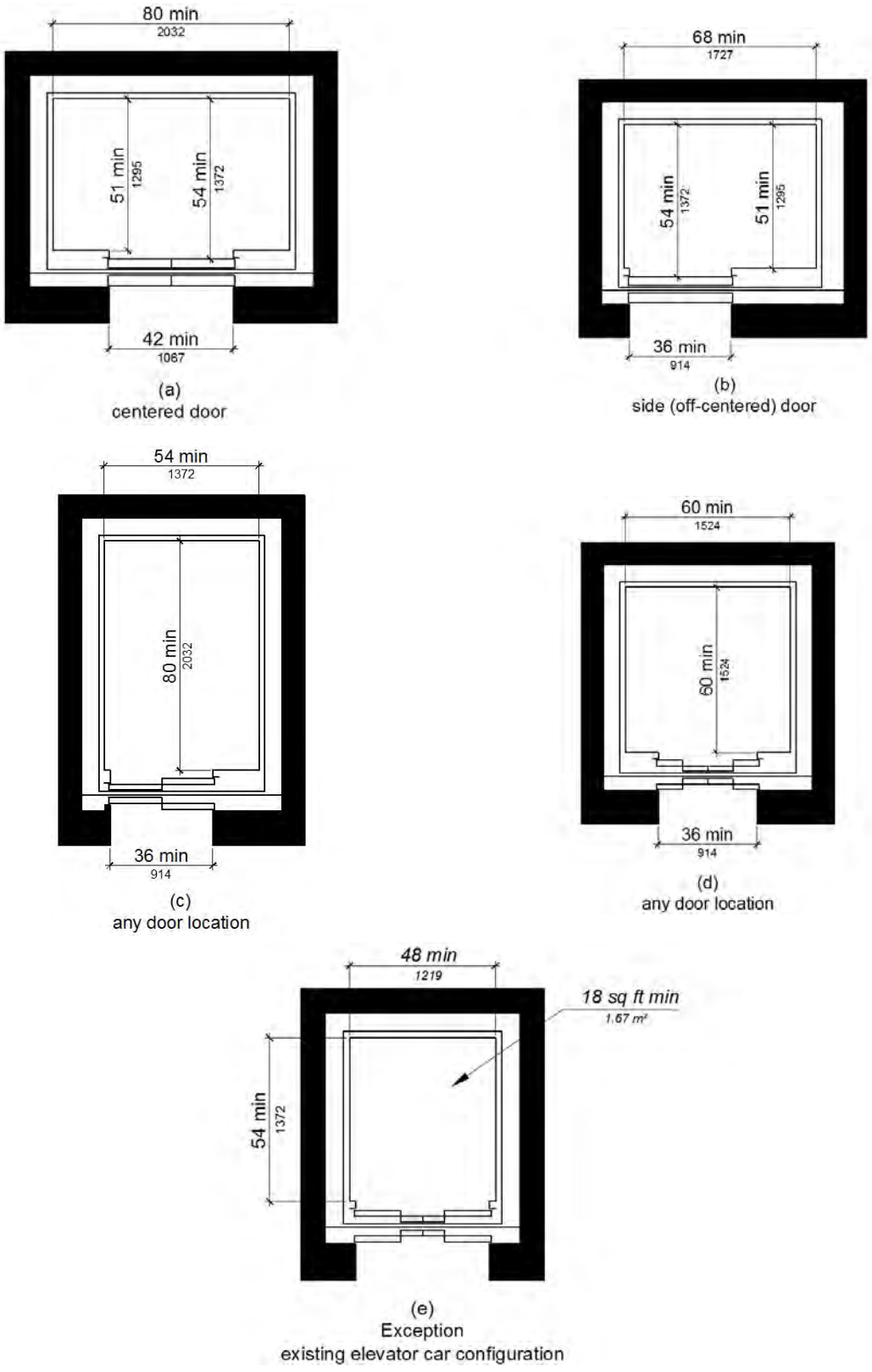


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TABLE *11B*-407.4.1—ELEVATOR CAR DIMENSIONS				
	MINIMUM MANEUVERING CLEARANCE			
Door location	**Door clear width**	**Inside car, side to side**	**Inside car, back wall to front return**	**Inside car, back wall to inside face of door**
Centered	42 inches (*1067* mm)	80 inches (*2032* mm)	51 inches (1295 mm)	54 inches (*1372* mm)
Side (off-centered)	36 inches (*914* mm)[1]	68 inches (*1727* mm)	51 inches (1295 mm)	54 inches (*1372* mm)
Any	36 inches (*914* mm)[1]	54 inches (*1372* mm)	80 inches (*2032* mm)	80 inches (*2032* mm)
Any	36 inches (*914* mm)[2]	60 inches (*1524* mm)[2]	60 inches (*1524* mm)[2]	60 inches (*1524* mm)[2]

1. A tolerance of minus $^{5}/_{8}$ inch (15.9 mm) is permitted.
2. Other car configurations that provide a turning space complying with *Section 11B*-304 with the door closed shall be permitted.

***11B*-407.4.2 Floor surfaces.** Floor surfaces in elevator cars shall comply with *Sections 11B*-302 and *11B*-303.

***11B*-407.4.3 Platform to hoistway clearance.** The clearance between the car platform sill and the edge of any hoistway landing shall be $1^{1}/_{4}$ inch (32 mm) maximum.

***11B*-407.4.4 Leveling.** Each car shall be equipped with a self-leveling feature that will automatically bring and maintain the car at floor landings within a tolerance of $^{1}/_{2}$ inch (*12.7* mm) under rated loading to zero loading conditions.

***11B*-407.4.5 Illumination.** The level of illumination at the car controls, platform, car threshold and car landing sill shall be 5 foot candles (54 lux) minimum.

***11B*-407.4.6 Elevator car controls.** Where provided, elevator car controls shall comply with *Sections 11B*-407.4.6 and *11B*-309.4.

Exception: In existing elevators, where a new car operating panel complying with *Section 11B*-407.4.6 is provided, existing car operating panels *may remain operational and* shall not be required to comply with *Section 11B*-407.4.6.

***11B*-407.4.6.1 Location.** Controls shall be located within one of the reach ranges specified in *Section 11B*-308.

Exceptions:

1. Where the elevator panel serves more than 16 openings and a parallel approach is provided, buttons with floor designations shall be permitted to be 54 inches (*1372* mm) maximum above the finish floor.
2. In existing elevators, car control buttons with floor designations shall be permitted to be located 54 inches (*1372* mm) maximum above the finish floor where a parallel approach is provided.

***11B*-407.4.6.2 Buttons.** Car control buttons with floor designations shall comply with *Section 11B*-407.4.6.2.

Exception: ***Reserved.***

11B*-407.4.6.2.1 Size *and shape. Buttons shall *have square shoulders,* be $^{3}/_{4}$ inch (*19.1* mm) minimum in their smallest dimension *and be raised $^{1}/_{8}$ inch (3.2 mm) plus or minus $^{1}/_{32}$ inch (0.8 mm) above the surrounding surface.*

***11B*-407.4.6.2.2 Arrangement.** Buttons shall be arranged with numbers in ascending order. When two or more columns of buttons are provided they shall read from left to right.

***11B-407.4.6.2.3 Illumination.** Car control buttons shall be illuminated.*

***11B-407.4.6.2.4 Operation.** Car control buttons shall be activated by a mechanical motion that is detectable.*

***11B*-407.4.6.3 Keypads.** Car control keypads shall be in a standard telephone keypad arrangement and shall comply with *Section 11B*-407.4.7.2.

***11B*-407.4.6.4 Emergency controls.** Emergency controls shall comply with *Section 11B*-407.4.6.4.

***11B*-407.4.6.4.1 Height.** Emergency control buttons shall have their centerlines 35 inches (*889* mm) minimum above the finish floor.

***11B*-407.4.6.4.2 Location.** Emergency controls, including the emergency alarm, shall be grouped at the bottom of the panel.

***11B*-407.4.7 Designations and indicators of car controls.** Designations and indicators of car controls shall comply with *Section 11B*-407.4.7.

Exception: In existing elevators, where a new car operating panel complying with *Section 11B*-407.4.7 is provided, existing car operating panels *may remain operational and* shall not be required to comply with *Section 11B*-407.4.7.

***11B*-407.4.7.1 Buttons.** Car control buttons shall comply with *Section 11B*-407.4.7.1.

***11B*-407.4.7.1.1 Type.** Control buttons shall be identified by *raised characters or symbols, white on a black background, complying with Section 11B-703.2 and Braille complying with Section 11B-703.3.*

***11B*-407.4.7.1.2 Location.** Raised *characters or symbols* and Braille designations shall be placed immediately to the left of the control button to which the designations apply.

Exception: *Reserved.*

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***11B*-407.4.7.1.3 Symbols.** The control button for the emergency stop, alarm, door open, door close, main entry floor and phone, shall be identified with *raised* symbols *and Braille* as shown in Table *11B*-407.4.7.1.3.

TABLE *11B*-407.4.7.1.3—ELEVATOR CONTROL BUTTON IDENTIFICATION

Control Button	Raised Symbol	Braille Message
Emergency Stop		"ST"OP Three Cells
Alarm		AL"AR"M Four Cells
Door Open		OP"EN" Three Cells
Door Close		CLOSE Five Cells
Main Entry Floor		MA"IN" Three Cells
Phone		PH"ONE" Four Cells

***11B*-407.4.7.1.4 Visible indicators.** Buttons with floor designations shall be provided with visible indicators to show that a call has been registered. The visible indication shall extinguish when the car arrives at the designated floor.

***11B-407.4.7.1.5 Button spacing.** A minimum clear space of $^{3}/_{8}$ inch (9.5 mm) or other suitable means of separation shall be provided between rows of control buttons.*

***11B*-407.4.7.2 Keypads.** Keypads shall be identified by characters complying with *Section 11B*-703.5 and shall be centered on the corresponding keypad button. The number five key shall have a single raised dot. The dot shall be 0.118 inch (3 mm) to 0.120 inch (3.05 mm) base diameter and in other aspects comply with Table *11B*-703.3.1.

***11B*-407.4.8 Car position indicators.** Audible and visible car position indicators shall be provided in elevator cars.

***11B*-407.4.8.1 Visible indicators.** Visible indicators shall comply with *Section 11B*-407.4.8.1.

***11B*-407.4.8.1.1 Size.** Characters shall be $^{1}/_{2}$ inch (*12.7* mm) high minimum.

***11B*-407.4.8.1.2 Location.** Indicators shall be located above the car control panel or above the door.

***11B*-407.4.8.1.3 Floor arrival.** As the car passes a floor and when a car stops at a floor served by the elevator, the corresponding character shall illuminate.

Exception: *Reserved.*

11B*-407.4.8.1.4 *Reserved.

***11B*-407.4.8.2 Audible indicators.** Audible indicators shall comply with *Section 11B*-407.4.8.2.

***11B*-407.4.8.2.1 Signal type.** The signal shall be an automatic verbal annunciator which announces the floor at which the car is about to stop.

Exception: For elevators that have a rated speed of 200 feet per minute (1 m/s) or less, a non-verbal audible signal with a frequency of 1500 Hz maximum which sounds as the car passes or is about to stop at a floor served by the elevator shall be permitted.

***11B*-407.4.8.2.2 Signal level.** The verbal annunciator shall be 10 dB minimum above ambient, but shall not exceed 80 dB, measured at the annunciator.

***11B*-407.4.8.2.3 Frequency.** The verbal annunciator shall have a frequency of 300 Hz minimum to 3000 Hz maximum.

***11B*-407.4.9 Emergency communication.** Emergency two-way communication systems shall comply with *Section 11B*-308*. Raised* symbols *or* characters*, white on a black background and Braille* shall be provided adjacent to the device and shall comply with *Sections 11B*-703.2 *and 11B-703.3. Emergency two-way communication systems between the elevator and a point outside the hoistway shall comply with ASME A17.1.*

***11B-407.4.10 Support rail.** Support rails shall be provided on at least one wall of the car.*

***11B-407.4.10.1 Location.** Clearance between support rails and adjacent surfaces shall be $1^{1}/_{2}$ inches (38 mm) minimum. Top of support rails shall be 31 inches (787 mm) minimum to 33 inches (838 mm) maximum above the floor of the car. The ends of the support rail shall be 6 inches (152 mm) maximum from adjacent walls.*

***11B-407.4.10.2 Surfaces.** Support rails shall be smooth and any surface adjacent to them shall be free of sharp or abrasive elements.*

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***11B*-407.4.10.3 Structural strength.** *Allowable stresses shall not be exceeded for materials used when a vertical or horizontal force of 250 pounds (1112 N) is applied at any point on the support rail, fastener, mounting device or supporting structure.*

SECTION 11B-408—LIMITED-USE/LIMITED-APPLICATION ELEVATORS

***11B*-408.1 General.** Limited-use/limited-application elevators shall comply with *Section 11B*-408 and with ASME A17.1. They shall be passenger elevators as classified by ASME A17.1. Elevator operation shall be automatic.

***11B*-408.2 Elevator landings.** Landings serving limited-use/limited-application elevators shall comply with *Section 11B*-408.2.

***11B*-408.2.1 Call buttons.** Elevator call buttons and keypads shall comply with *Section 11B*-407.2.1.

***11B*-408.2.2 Hall signals.** Hall signals shall comply with *Section 11B*-407.2.2.

***11B*-408.2.3 Hoistway signs.** Signs at elevator hoistways shall comply with *Section 11B*-407.2.3.1.

***11B*-408.3 Elevator doors.** Elevator hoistway doors shall comply with *Section 11B*-408.3.

***11B*-408.3.1 Sliding doors.** Sliding hoistway and car doors shall comply with *Sections 11B*-407.3.1 through *11B*-407.3.3 and *11B*-408.4.1.

***11B*-408.3.2 Swinging doors.** Swinging hoistway doors shall open and close automatically and shall comply with *Sections 11B*-404, *11B*-407.3.2 and *11B*-408.3.2.

***11B*-408.3.2.1 Power operation.** Swinging doors shall be power-operated and shall comply with ANSI/BHMA A156.19.

***11B*-408.3.2.2 Duration.** Power-operated swinging doors shall remain open for 20 seconds minimum when activated.

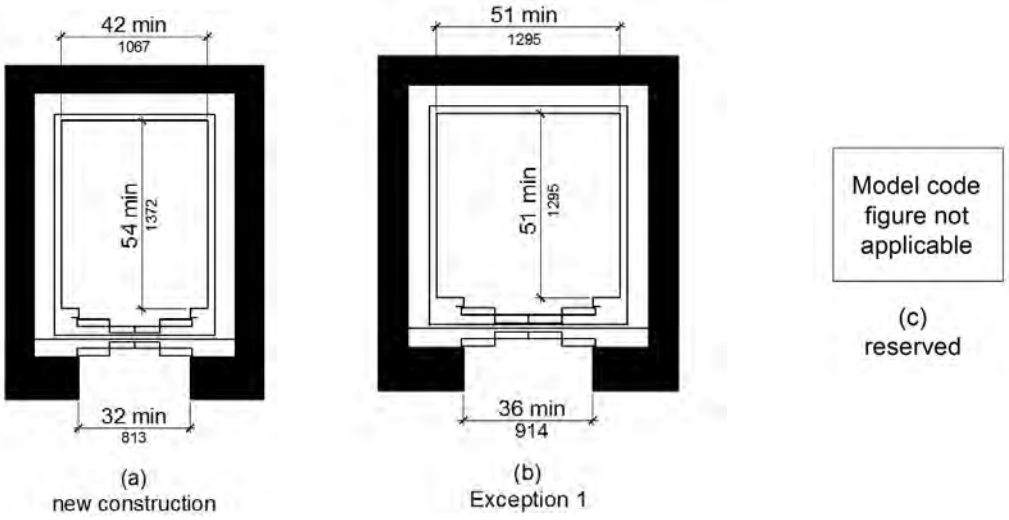
***11B*-408.4 Elevator cars.** Elevator cars shall comply with *Section 11B*-408.4.

***11B*-408.4.1 Car dimensions and doors.** Elevator cars shall provide a clear width 42 inches (*1067* mm) minimum and a clear depth 54 inches (*1372* mm) minimum. Car doors shall be positioned at the narrow ends of cars and shall provide 32 inches (*813* mm) minimum clear width.

Exceptions:

1. Cars that provide a clear width 51 inches (1295 mm) minimum shall be permitted to provide a clear depth 51 inches (1295 mm) minimum provided that car doors provide a clear opening 36 inches (*914* mm) wide minimum.
2. ***Reserved.***

FIGURE *11B*-408.4.1—LIMITED-USE/LIMITED-APPLICATION (LULA) ELEVATOR CAR DIMENSIONS



***11B*-408.4.2 Floor surfaces.** Floor surfaces in elevator cars shall comply with *Sections 11B*-302 and *11B*-303.

***11B*-408.4.3 Platform to hoistway clearance.** The platform to hoistway clearance shall comply with *Section 11B*-407.4.3.

***11B*-408.4.4 Leveling.** Elevator car leveling shall comply with *Section 11B*-407.4.4.

***11B*-408.4.5 Illumination.** Elevator car illumination shall comply with *Section 11B*-407.4.5.

***11B*-408.4.6 Car controls.** Elevator car controls shall comply with *Section 11B*-407.4.6. Control panels shall be centered on a side wall.

***11B*-408.4.7 Designations and indicators of car controls.** Designations and indicators of car controls shall comply with *Section 11B*-407.4.7.

***11B*-408.4.8 Emergency communications.** Car emergency signaling devices complying with *Section 11B*-407.4.9 shall be provided.

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SECTION 11B-409—PRIVATE RESIDENCE ELEVATORS

***11B*-409.1 General.** Private residence elevators that are provided within a residential dwelling unit required to provide mobility features complying with *Sections 11B*-809.2 through *11B*-809.4 shall comply with *Section 11B*-409 and with ASME A17.1. They shall be passenger elevators as classified by ASME A17.1. Elevator operation shall be automatic.

***11B*-409.2 Call buttons.** Call buttons shall be $^{3}/_{4}$ inch (*19.1* mm) minimum in the smallest dimension and shall comply with *Section 11B*-309.

***11B*-409.3 Elevator doors.** Hoistway doors, car doors and car gates shall comply with *Sections 11B*-409.3 and *11B*-404.

Exception: Doors shall not be required to comply with the maneuvering clearance requirements in *Section 11B*-404.2.4.1 for approaches to the push side of swinging doors.

***11B*-409.3.1 Power operation.** Elevator car and hoistway doors and gates shall be power operated and shall comply with ANSI/BHMA A156.19. Power operated doors and gates shall remain open for 20 seconds minimum when activated.

Exception: In elevator cars with more than one opening, hoistway doors and gates shall be permitted to be of the manual-open, self-close type.

***11B*-409.3.2 Location.** Elevator car doors or gates shall be positioned at the narrow end of the clear floor spaces required by *Section 11B*-409.4.1.

***11B*-409.4 Elevator cars.** Private residence elevator cars shall comply with *Section 11B*-409.4.

***11B*-409.4.1 Inside dimensions of elevator cars.** Elevator cars shall provide a clear floor space of 36 inches (*914* mm) minimum by 48 inches (*1219* mm) minimum and shall comply with *Section 11B*-305.

***11B*-409.4.2 Floor surfaces.** Floor surfaces in elevator cars shall comply with *Sections 11B*-302 and *11B*-303.

***11B*-409.4.3 Platform to hoistway clearance.** The clearance between the car platform and the edge of any landing sill shall be $1^{1}/_{2}$ inch (38 mm) maximum.

***11B*-409.4.4 Leveling.** Each car shall automatically stop at a floor landing within a tolerance of $^{1}/_{2}$ inch (*12.7* mm) under rated loading to zero loading conditions.

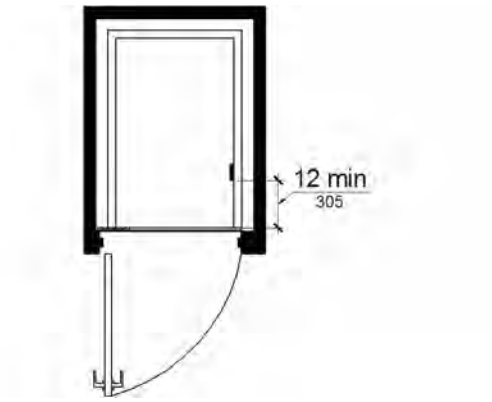
***11B*-409.4.5 Illumination levels.** Elevator car illumination shall comply with *Section 11B*-407.4.5.

***11B*-409.4.6 Car controls.** Elevator car control buttons shall comply with *Sections 11B*-409.4.6, *11B*-309.3, *11B*-309.4 and shall be raised or flush.

***11B*-409.4.6.1 Size.** Control buttons shall be $^{3}/_{4}$ inch (*19.1* mm) minimum in their smallest dimension.

***11B*-409.4.6.2 Location.** Control panels shall be on a side wall, 12 inches (305 mm) minimum from any adjacent wall.

FIGURE *11B*-409.4.6.2—LOCATION OF PRIVATE RESIDENCE ELEVATOR CONTROL PANEL



***11B*-409.4.7 Emergency communications.** Emergency two-way communication systems shall comply with *Section 11B*-409.4.7.

***11B*-409.4.7.1 Type.** A telephone and emergency signal device shall be provided in the car.

***11B*-409.4.7.2 Operable parts.** The telephone and emergency signaling device shall comply with *Sections 11B*-309.3 and *11B*-309.4.

***11B*-409.4.7.3 Compartment.** If the telephone or device is in a closed compartment, the compartment door hardware shall comply with *Section 11B*-309.

***11B*-409.4.7.4 Cord.** The telephone cord shall be 29 inches (*737* mm) long minimum.

SECTION 11B-410—PLATFORM LIFTS

***11B*-410.1 General.** Platform lifts shall comply with ASME A18.1. Platform lifts shall not be attendant-operated and shall provide unassisted entry and exit from the lift.

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***11B*-410.2 Floor surfaces.** Floor surfaces in platform lifts shall comply with *Sections 11B*-302 and *11B*-303.

***11B*-410.3 Clear floor space.** Clear floor space in platform lifts shall comply with *Section 11B*-305.

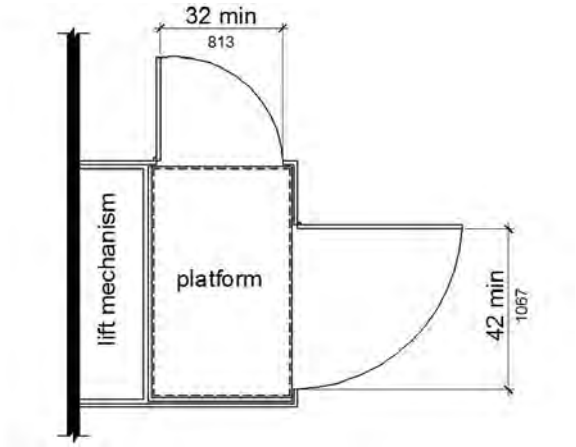
***11B*-410.4 Platform to runway clearance.** The clearance between the platform sill and the edge of any runway landing shall be $1^1/_4$ inch (32 mm) maximum.

***11B*-410.5 Operable parts.** Controls for platform lifts shall comply with *Section 11B*-309.

***11B*-410.6 Doors and gates.** Platform lifts shall have low-energy power-operated doors or gates complying with *Section 11B*-404.3. Doors shall remain open for 20 seconds minimum. End doors and gates shall provide a clear width 32 inches (*813* mm) minimum. Side doors and gates shall provide a clear width 42 inches (*1067* mm) minimum.

Exception: Platform lifts serving two landings maximum and having doors or gates on opposite sides shall be permitted to have self-closing manual doors or gates.

FIGURE *11B*-410.6—PLATFORM LIFT DOORS AND GATES



11B-410.7 Landing size. *The minimum size of landings at platform lifts shall be 60 inches by 60 inches (1524 mm by 1524 mm).*

11B-410.8 Restriction sign. *A sign complying with Section 11B-703.5 shall be posted in a conspicuous place at each landing and within the platform enclosure stating "No Freight" and include the International Symbol of Accessibility complying with Section 11B-703.7.2.1.*

SECTION 11B-411—DESTINATION-ORIENTED ELEVATORS

11B-411.1 General. *Destination-oriented elevators shall comply with Section 11B-411 and with ASME A17.1. They shall be passenger elevators as classified by ASME A17.1. Elevator operation shall be automatic.*

11B-411.1.1 Floor designations. *In facilities served by destination-oriented elevator systems, floor designations shall be numeric characters only. Floor designations shall be "one" (1) or "zero" (0) at the main entry level and shall increase by one for each successive higher story or level. The initial floor below the main entry level shall be designated "minus one" (-1) and the designation for each successive lower story or level shall decrease by one. Stories or levels shall not be designated by alphabetic characters.*

Exceptions:

1. *In existing facilities where new elevators are installed or existing elevators are altered into a destination-oriented elevator system, levels within stories, such as mezzanines located above or below the main entry level shall be permitted to be designated with an alpha-numeric character such as "M2", indicating "mezzanine" and the "story number", respectively, in which it is located, provided there is no duplication with alpha-numeric designations of elevator cars in the facility.*
2. *Non-successive floor numbering shall be permitted where a specific floor number is omitted or where a floor is frequented only by service personnel for maintenance, repair or occasional monitoring of equipment.*

11B-411.1.2 Car designations. *Elevator cars shall be designated with a single alphabetic character. For elevators programmed to the same hall call console or group of hall call consoles, each elevator car shall be designated with a different single alphabetic character.*

Exception: *Elevator systems with more than 26 elevators shall be permitted to use alpha-numeric designations such as "A1".*

11B-411.2 Elevator landing requirements. *Elevator landings shall comply with Section 11B-411.2.*

11B-411.2.1 Hall call consoles. *Hall call consoles shall comply with Sections 11B-411.2.1 and 11B-309.*

11B-411.2.1.1 Location. *Hall call consoles shall be wall-mounted. On floors with a building entry, including parking and transfer levels, each hoistway entrance shall be adjacent to a hall call console. On other floors, a minimum of one hoistway entrance shall be adjacent to a hall call console.*

Exception: *Hall call consoles beyond those required by Section 11B-411.2.1.1 shall be permitted to be provided outside the elevator landing and to be wall-mounted, pedestal-mounted or mounted on a kiosk or security turnstile.*

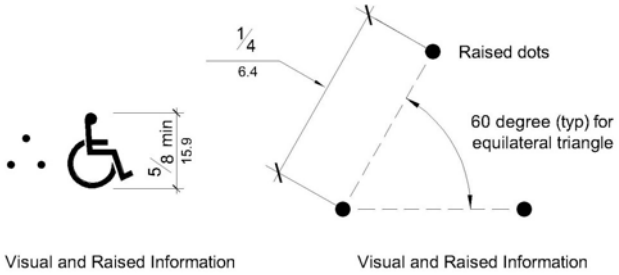
11B-411.2.1.2 Required features. *Hall call consoles shall include a touch screen or keypad with display screen, an accessibility function button and audio output loudspeaker.*

11B-411.2.1.2.1 Keypads. *Keypads shall be in a 12-key ascending telephone keypad layout. Characters and symbols shall be centered on the corresponding button. The number five key shall have a single raised dot. The dot shall have a base diameter of 0.118 inch (3 mm) minimum and 0.120 inch (3.05 mm) maximum and a height of 0.025 inch (0.6 mm) minimum and 0.037 inch (0.9 mm) maximum. Keypads shall have a star (☆) on the lower left button and a minus sign (-) on the lower right button. From any level above and below the main egress level, when the star button is pressed an elevator shall be dispatched to the main egress level.*

11B-411.2.1.2.2 Touch screen. *Touch screen display shall comply with Section 11B-411.2.1.2.4.*

11B-411.2.1.2.3 Accessibility function button. *The accessibility function button shall be identified by the International Symbol of Accessibility and a raised indication. The International Symbol of Accessibility shall comply with Section 11B-703.7.2.1, and shall be $^{5}/_{8}$ inch (15.9 mm) minimum in height. The indication shall be three raised dots. Each dot shall have a base diameter of 0.059 inch (1.5 mm) minimum and 0.063 inch (1.6 mm) maximum and a height of 0.025 inch (0.6 mm) minimum and 0.037 inch (0.9 mm) maximum. The dots shall be spaced $^{1}/_{4}$ inch (6.4 mm), measured center to center, in the form of an equilateral triangle with a vertex pointing up. The accessibility function button shall not be provided with a key repeat function.*

FIGURE 11B-411.2.1.2.3—DESTINATION-ORIENTED ELEVATOR ACCESSIBILITY FUNCTION BUTTON INDICATION



11B-411.2.1.2.4 Display screen. *Upon activation of the accessibility function button, the display screen shall display information including but not limited to, operating instructions, user input confirmation, elevator assignment characters, direction to the assigned elevator and error messages. The display screen shall comply with Section 11B-411.2.1.2.4.*

11B-411.2.1.2.4.1 Contrast. *Display screens shall provide contrast with light characters and symbols on a dark background or dark characters and symbols on a light background. The background shall be solid and static.*

11B-411.2.1.2.4.2 Size. *Elevator assignment characters shall be 1 inch high (25 mm) minimum.*

11B-411.2.1.2.4.3 Duration. *Elevator assignment characters shall be displayed for a minimum of 5 seconds.*

11B-411.2.1.2.5 Audio output. *Upon activation of the accessibility function button, the audio output shall provide verbal announcements, including but not limited to, operating instructions, user input confirmation, announcement of the elevator assignment characters, direction to the assigned elevator and error messages. Audio output shall be recorded or digitized human speech, and shall be delivered through a loudspeaker. Auditory volume shall be at least 10 dB above ambient sound level, but shall not exceed 80 dB, measured 36 inches (914 mm) in front of the console. At hall call console locations where the ambient sound level varies, auditory volume shall be maintained at the required volume by an automatic gain control or shall be set at not less than 75 dB.*

11B-411.2.1.3 Arrangement. *Hall call console arrangement of required features shall comply with Section 11B-411.2.1.3.*

11B-411.2.1.3.1 Keypad call console arrangement. *Where keypad call consoles are provided, the display screen shall be located directly above the keypad. The accessibility function button shall be located directly below the keypad at a height of 36 inches (914 mm) to 42 inches (1067 mm) above the finish floor.*

11B-411.2.1.3.2 Touch screen call console arrangement. *Where touch screen call consoles are provided, the touch screen shall be located directly above the accessibility function button. The accessibility function button shall be located at a height of 36 inches (914 mm) to 42 inches (1067 mm) above the finish floor.*

11B-411.2.1.3.3 Proximity of required elements. *Required features shall be provided on a hall call console assembly or as individual elements grouped in close proximity.*

11B-411.2.1.3.4 Position. *Display screens and touch screens shall be positioned so glare is reduced on the screen. Keypads or buttons shall slope away from the user at 15 to 25 degrees from the vertical plane. Touch screens shall be sloped away from the user at 7 to 25 degrees from the vertical plane.*

11B-411.2.1.4 Additional features. *Hall call console additional features, if provided, shall comply with Sections 11B-309 and 11B-411.2.1.4.*

11B-411.2.1.4.1 Hall call console additional buttons. *Hall call console buttons provided in addition to the accessibility function button and keypad buttons shall comply with Section 11B-411.2.1.4.1. Buttons in addition to the accessibility function button are not permitted on hall call consoles using a touch screen.*

11B-411.2.1.4.1.1 Arrangement. *Buttons shall be arranged in columns to the right of the keypad with a minimum horizontal spacing of 1.5 times the horizontal spacing between the numeric keys and with the same vertical spacing as the numeric keys.*

11B-411.2.1.4.1.2 Identification. *Buttons shall be identified by raised characters and symbols, white on a black background, complying with Section 11B-703.2 and Braille complying with Section 11B-703.3. Identification shall be placed immediately to the left of the control button to which the designation applies.*

11B-411.2.1.4.2 Security or access controls. *Security or access control system card readers associated with elevator operation shall be in close proximity to each hall call console in a consistent manner throughout the facility.*

11B-411.2.1.5 Button requirements. *Keypad buttons, the accessibility function button and additional hall call console buttons shall comply with Section 11B-411.2.1.5.*

11B-411.2.1.5.1 Size. *Buttons shall have square shoulders, be $^{3}/_{4}$ inch (19.1 mm) minimum in the smallest dimension and shall be raised $^{1}/_{8}$ inch (3.2 mm) plus or minus $^{1}/_{32}$ inch (0.8 mm) above the surrounding surface. The buttons shall be activated by a mechanical motion that is detectable.*

11B-411.2.1.5.2 Color. *Characters and symbols on buttons, where provided, shall be white on a black background.*

11B-411.2.1.6 Identification of floors served. *In buildings with two or more elevator banks, each serving a different group of specific floors, hall call consoles located on floors with a building entry, including parking and transfer levels, shall be provided with signs complying with Sections 11B-703.2, 11B-703.3 and 11B-703.5 on the surface of or above the hall call console stating "FLOORS n1 – n2," where n1 – n2 represents the range of floors served. Characters shall be white on a black background. When the accessibility function button is pressed, the audio output shall provide a verbal announcement of the floors served by the elevator group.*

11B-411.2.1.7 Elevator car assignment. *When the accessibility function button is pressed, elevator car assignment shall comply with Section 11B-411.2.1.7.*

11B-411.2.1.7.1 Assignment by keypad hall call console. *The audio output shall provide verbal instruction for the user to enter a destination floor. The selected destination floor shall be confirmed by verbal announcement and on the display screen. Verbal and visible indication of an invalid input shall be provided. The display screen shall indicate the elevator assignment characters and a verbal announcement shall be made of the assigned elevator responding to the call. Visual and verbal direction to the assigned elevator shall be provided.*

11B-411.2.1.7.2 Assignment by touch screen hall call console. *The audio output shall provide verbal instruction for the user to press the accessibility function button as a response to verbal direction in order to select the destination floor. The selected destination floor shall be confirmed by verbal announcement and on the display screen. Verbal and visible indication of an invalid input shall be provided. The display screen shall indicate the elevator assignment characters and a verbal announcement shall be made of the assigned elevator responding to the call. Visual and verbal direction to the assigned elevator shall be provided.*

Exception: *In addition to assignment by Section 11B-411.2.1.7.2, a verbal announcement providing the user with an option to select an alternative mode of operation shall be permitted. Alternative operation shall be by one of the following options:*

1. *Virtual keypad. The size of the keypad shall be a nominal 4 inches (102 mm) wide by 5 inches (127 mm) high in a 12-key ascending telephone keypad layout centered in the console. Characters and symbols shall be centered on the corresponding button. Keypads shall have a star (☆) on the lower left button and a minus sign (-) on the lower right button. Operation shall be by contact with the touch screen with a press on the key. The audio output shall provide user input confirmation after each key is pressed. Keys shall not be provided with a key repeat function. From any level above and below the main egress level, when the star button is pressed an elevator shall be dispatched to the main egress level.*
2. *Gesture-based mode of operation. Operation shall be by contact with the touch screen, without specific contact with an icon, and using established non-proprietary gestures for selection and input, including but not limited to tapping, sliding and tap-hold contact-release to select. The audio output shall provide verbal direction on use of the touch screen, and indication of floor selection options, until assignment to the elevator is given.*

11B-411.2.1.7.3 Assignment by security credential. *If a security system or other form of access control system is provided, the audio output shall provide a verbal announcement and direction to the location of the access control activation sensor, such as "present security credential at the sensor immediately to the left". Upon presentation of security credential, the destination floor shall be confirmed by verbal announcement and on the display screen. The display screen shall indicate the elevator assignment characters and a verbal announcement shall be made of the assigned elevator responding to the call. Visual and verbal direction to the assigned elevator shall be provided.*

11B-411.2.1.7.4 Adjacency assignment. *The system shall assign an elevator car immediately to the left or right of the hall call console.*

Exception: *The most adjacent elevator serving the selected floor shall be assigned by hall call consoles located outside the elevator landing.*

11B-411.2.2 Elevator car identification at elevator landings. *Elevator car identification shall comply with Section 11B-411.2.2.*

11B-411.2.2.1 Visible identification. *Above or adjacent to each elevator car entrance there shall be a visible identification fixture with a car designation character. The identification fixture shall be 80 inches (2032 mm) minimum above the finish floor or ground to the bottom of the fixture. The characters on the fixture shall be upper case with a height of 4 inches (102 mm) minimum complying with Sections 11B-703.5.1, 11B-703.5.3, 11B-703.5.4, 11B-703.5.7 and 11B-703.5.8.*

Exception: *Existing buildings shall be permitted to have a visible identification fixture with a car designation character adjacent to each elevator car entrance centered at 72 inches (1829 mm) above the finish floor or ground. The character on the fixture shall be upper case with a height of $2^1/_2$ inches (64 mm) minimum complying with Sections 11B-703.5.1, 11B-703.5.3, 11B-703.5.4, 11B-703.5.7 and 11B-703.5.8.*

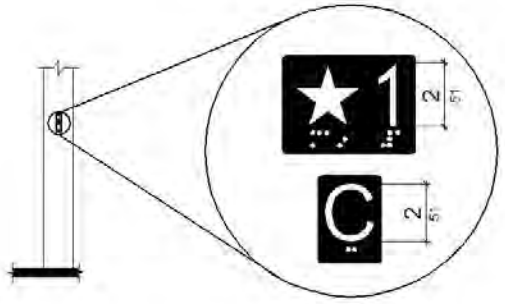
11B-411.2.2.2 Verbal identification. *When the accessibility function button is pressed, verbal announcement of the car designation shall be provided at the elevator car entrance upon arrival. Audio output shall be recorded or digitized human speech, and shall be delivered through a loudspeaker. The verbal annunciator shall have a frequency of 300 Hz minimum and 3000 Hz maximum. Auditory volume shall be at least 10 dB above ambient sound level, but shall not exceed 80 dB, measured 36 inches (914 mm) in front of the elevator entrance and at 48 inches (1219 mm) above the floor. At elevator entrances where the ambient sound level varies, auditory volume shall be maintained at the required volume by an automatic gain control or shall be set at not less than 75 dB.*

11B-411.2.3 Signs on jambs of elevator hoistway entrances. *Signs on jambs of elevator hoistway entrances shall comply with Section 11B-411.2.3.*

11B-411.2.3.1 Floor designation signs. *Floor designation signs complying with Sections 11B-703.2 and 11B-703.4.1 shall be provided on both jambs of elevator hoistway entrances. Signs shall be provided in both raised characters and Braille. Raised characters shall be 2 inches (51 mm) high. A raised star placed to the left of the floor designation, shall be provided on both jambs at the main entry level. The outside diameter of the star shall be 2 inches (51 mm) and all points shall be of equal length. Raised characters, including the star, shall be white on a black background. Braille complying with Section 11B-703.3 shall be placed below the corresponding raised characters and the star. The Braille translation for the star shall be "MAIN". Applied plates are acceptable if they are permanently fixed to the jamb.*

11B-411.2.3.2 Car designation signs. *Car designation signs complying with Sections 11B-703.2 and 11B-703.4.1 shall be provided on both jambs of the hoistway immediately below the floor designation. Signs shall be provided in both raised characters and Braille. Raised characters shall be 2 inches (51 mm) high. Raised characters shall be white on a black background. Braille complying with Section 11B-703.3 shall be placed below the corresponding raised characters. Applied plates are acceptable if they are permanently fixed to the jamb.*

FIGURE *11B*-411.2.3—FLOOR DESIGNATION AND CAR DESIGNATION SIGNS ON JAMBS OF DESTINATION-ORIENTED ELEVATOR HOISTWAY ENTRANCES



11B-411.3 Elevator door requirements. *Hoistway and car doors shall comply with Section 11B-411.3.*

11B-411.3.1 Type. *Elevator door type shall comply with Section 11B-407.3.1.*

11B-411.3.2 Operation. *Elevator hoistway and car doors shall open and close automatically.*

11B-411.3.3 Reopening device. *Elevator doors shall be provided with a reopening device complying with Section 11B-411.3.3 that shall stop and reopen a car door and hoistway door automatically if the door becomes obstructed by an object or person.*

11B-411.3.3.1 Height. *The height of the reopening device shall comply with Section 11B-407.3.3.1.*

11B-411.3.3.2 Contact. *The device contact shall comply with Section 11B-407.3.3.2.*

11B-411.3.3.3 Duration. *The door reopening device duration shall comply with Section 11B-407.3.3.3.*

11B-411.3.4 Door delay. *Door delay shall comply with Section 11B-407.3.5.*

11B-411.3.5 Width. *The width of elevator doors shall comply with Table 11B-407.4.1.*

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11B-411.4 Elevator car requirements. *Elevator cars shall comply with Section 11B-411.4.*

11B-411.4.1 Car dimensions. *Inside dimensions of elevator cars and clear width of elevator doors shall comply with Section 11B-407.4.1.*

11B-411.4.2 Floor surfaces. *Floor surfaces in elevator cars shall comply with Section 11B-407.4.2.*

11B-411.4.3 Platform to hoistway clearance. *Platform to hoistway clearance shall comply with Section 11B-407.4.3.*

11B-411.4.4 Leveling. *Elevator car leveling shall comply with Section 11B-407.4.4.*

11B-411.4.5 Illumination. *The level of illumination at the car controls shall comply with Section 11B-407.4.5.*

11B-411.4.6 Elevator car controls. *Where provided, elevator car controls shall comply with Sections 11B-411.4.6 and 11B-309.4.*

11B-411.4.6.1 Location. *Controls shall be located within one of the reach ranges specified in Section 11B-308.*

11B-411.4.6.2 Buttons. *Car control buttons shall comply with Sections 11B-407.4.6.2.1 and 11B-407.4.6.2.4. The car shall not have non-functional, exposed floor buttons.*

11B-411.4.6.3 Emergency controls. *Emergency controls shall comply with Section 11B-407.4.6.4.*

11B-411.4.7 Designations and indicators of car control buttons. *Designations and indicators of car control buttons shall comply with Section 11B-411.4.7.*

11B-411.4.7.1 Type. *Control button type shall comply with Section 11B-407.4.7.1.1.*

11B-411.4.7.2 Location. *Raised characters or symbols and Braille designations shall comply with Section 11B-407.4.7.1.2.*

11B-411.4.7.3 Symbols. *The control button for the emergency stop, alarm, door open, door close and phone shall be identified with raised symbols and Braille as shown in Table 11B-407.4.7.1.3.*

11B-411.4.7.4 Button spacing. *Button spacing shall comply with Section 11B-407.4.7.1.5.*

11B-411.4.8 Car position indicators. *Audible and visible car position indicators shall be provided in elevator cars.*

11B-411.4.8.1 Visible indicators. *Visible indicators shall comply with Section 11B-411.4.8.1.*

11B-411.4.8.1.1 Size. *Characters shall comply with Section 11B-407.4.8.1.1.*

11B-411.4.8.1.2 Location. *Location of indicators shall comply with Section 11B-407.4.8.1.2.*

11B-411.4.8.2 Audible indicators. *Audible indicators shall comply with Section 11B-411.4.8.2.*

11B-411.4.8.2.1 Signal type. *The signal shall be an automatic verbal annunciator which announces the floor at which the car is about to stop.*

11B-411.4.8.2.2 Signal level. *The verbal annunciator signal level shall comply with Section 11B-407.4.8.2.2.*

11B-411.4.8.2.3 Frequency. *The verbal annunciator frequency shall comply with Section 11B-407.4.8.2.3.*

11B-411.4.9 Emergency communication. *Emergency communication shall comply with Section 11B-407.4.9.*

11B-411.4.10 Support rail. *Support rails complying with Section 11B-407.4.10 shall be provided on at least one wall of the car.*

11B-411.4.11 Floor destination indicators. *There shall be on each elevator car door jamb a visual display indicating floor destinations.*

11B-411.4.11.1 Height. *Floor destination characters shall be 1 inch (25 mm) high minimum complying with Section 11B-703.5.3.*

11B-411.4.11.2 Contrast. *Visual display shall provide contrast with light characters on a dark background or dark characters on a light background. The background shall be solid and static.*

11B-411.4.11.3 Duration. *Floor destination characters shall be displayed upon elevator car arrival at the input floor and shall not extinguish until the elevator car arrives at the destination floor.*

DIVISION 5: GENERAL SITE AND BUILDING ELEMENTS

SECTION 11B-501—GENERAL

***11B*-501.1 Scope.** The provisions of *Division* 5 shall apply where required by *Division* 2 or where referenced by a requirement in this *chapter.*

SECTION 11B-502—PARKING SPACES

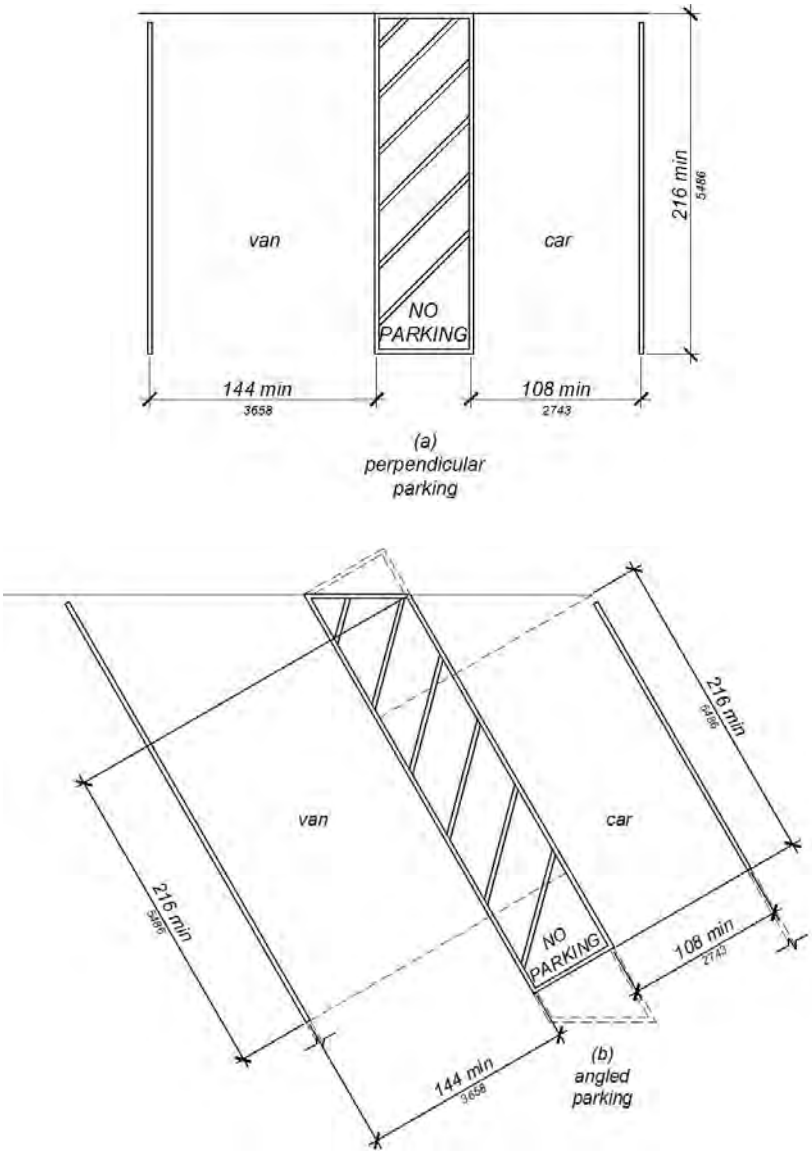
***11B*-502.1 General.** Car and van parking spaces shall comply with *Section 11B*-502. Where parking spaces are marked with lines, width measurements of parking spaces and access aisles shall be made from the centerline of the markings.

Exception: Where parking spaces or access aisles are not adjacent to another parking space or access aisle, measurements shall be permitted to include the full width of the line defining the parking space or access aisle.

***11B*-502.2 Vehicle spaces.** *Car and van parking spaces shall be 216 inches (5486 mm) long minimum.* Car parking spaces shall be *108 inches (2743 mm)* wide minimum and van parking spaces shall be *144 inches (3658 mm)* wide minimum, shall be marked to define the width, and shall have an adjacent access aisle complying with *Section 11B*-502.3.

Exception: Van parking spaces shall be permitted to be *108 inches (2743 mm)* wide minimum where the access aisle is 96 inches *(2438* mm) wide minimum.

FIGURE *11B*-502.2—VEHICLE PARKING SPACES



***11B*-502.3 Access aisle.** Access aisles serving parking spaces shall comply with *Section 11B*-502.3. Access aisles shall adjoin an accessible route. Two parking spaces *or one parking space and one electric vehicle charging space* shall be permitted to share a common access aisle.

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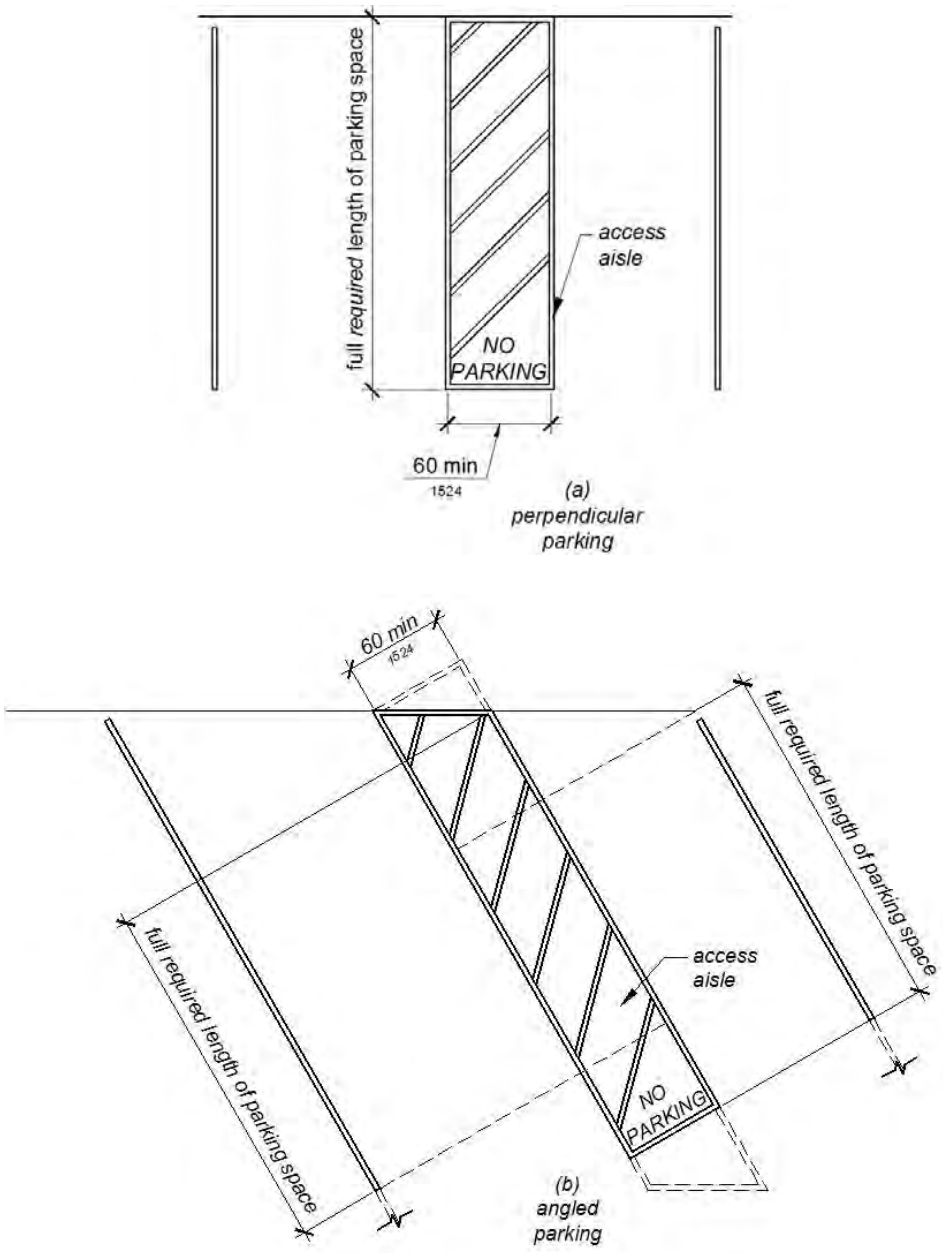
FIGURE *11B*-502.3—PARKING SPACE ACCESS AISLE

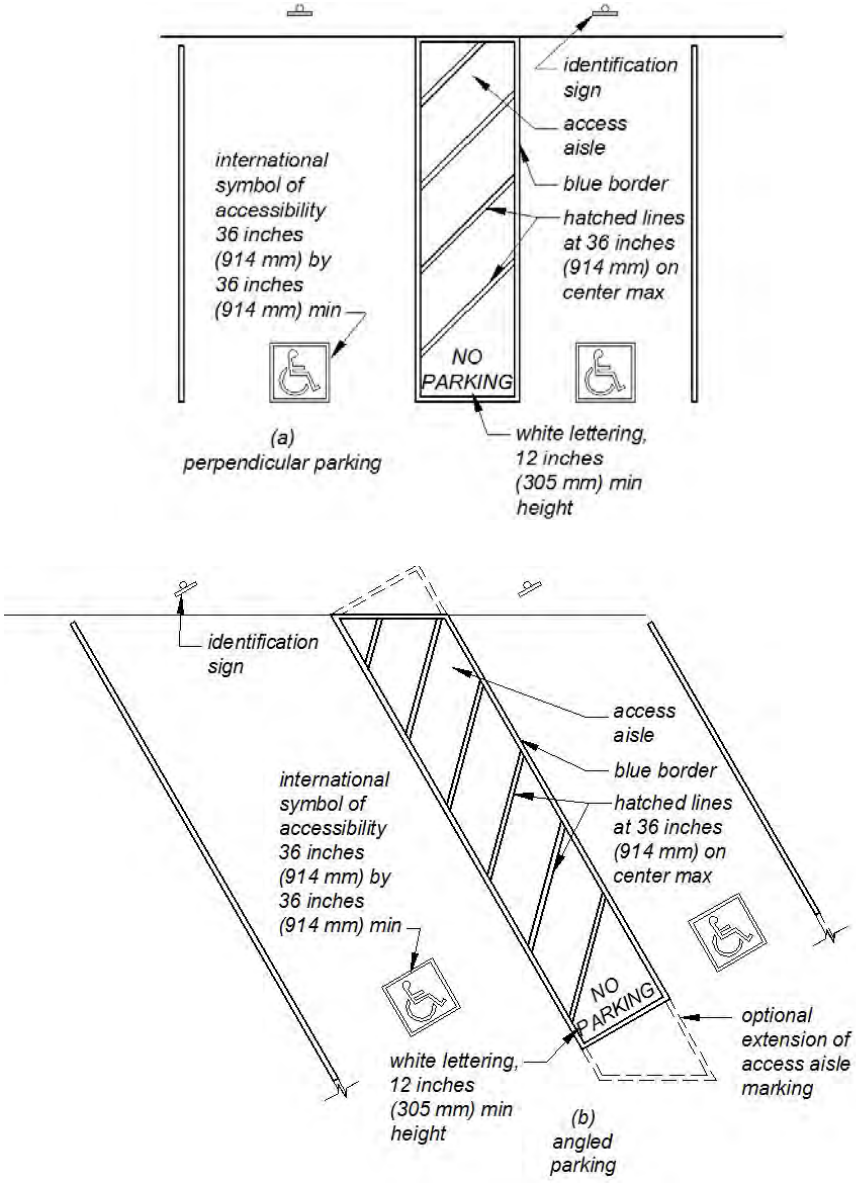


***11B*-502.3.1 Width.** Access aisles serving car and van parking spaces shall be 60 inches (*1524* mm) wide minimum.

***11B*-502.3.2 Length.** Access aisles shall extend the full *required* length of the parking spaces they serve.

***11B*-502.3.3 Marking.** Access aisles shall be marked *with a blue painted borderline around their perimeter. The area within the blue borderlines shall be marked with hatched lines a maximum of 36 inches (914 mm) on center in a color contrasting with that of the aisle surface, preferably blue or white. The words "NO PARKING" shall be painted on the surface within each access aisle in white letters a minimum of 12 inches (305 mm) in height and located to be visible from the adjacent vehicular way. Access aisle markings may extend beyond the minimum required length.*

FIGURE 11B-502.3.3—ANGLED AND PERPENDICULAR PARKING IDENTIFICATION


identification sign
access aisle
blue border
hatched lines at 36 inches (914 mm) on center max
international symbol of accessibility 36 inches (914 mm) by 36 inches (914 mm) min
NO PARKING
white lettering, 12 inches (305 mm) min height
(a) perpendicular parking
identification sign
access aisle
blue border
hatched lines at 36 inches (914 mm) on center max
international symbol of accessibility 36 inches (914 mm) by 36 inches (914 mm) min
NO PARKING
optional extension of access aisle marking
white lettering, 12 inches (305 mm) min height
(b) angled parking

***11B*-502.3.4 Location.** Access aisles shall not overlap the vehicular way. Access aisles shall be permitted to be placed on either side of the parking space except for van parking spaces which shall have access aisles located on the passenger side of the parking spaces.

***11B*-502.4 Floor or ground surfaces.** Parking spaces and access aisles serving them shall comply with *Section 11B*-302. Access aisles shall be at the same level as the parking spaces they serve. Changes in level, *slopes exceeding 1:48, and detectable warnings shall not be permitted.*

Exception: *Reserved.*

***11B*-502.5 Vertical clearance.** Parking *spaces,* access aisles and vehicular routes serving them shall provide a vertical clearance of 98 inches (*2489* mm) minimum.

Exception: *In existing multistory parking facilities, car parking spaces, access aisles and vehicular routes serving them shall provide a vertical clearance of 80 inches (2032 mm) minimum. Existing vertical clearance in excess of 80 inches (2032 mm) and less than 98 inches (2489 mm) shall be maintained. This exception shall not apply to van parking spaces, access aisles or vehicular routes serving them.*

***11B*-502.6 Identification.** Parking space identification signs shall include the International Symbol of Accessibility complying with *Section 11B*-703.7.2.1 *in white on a blue background.* Signs identifying van parking spaces shall contain *additional language or an additional sign with* the designation “van accessible”. Signs shall be 60 inches (*1524* mm) minimum above the finish floor or ground surface measured to the bottom of the sign.

Exception: *Signs located within a circulation path shall be a minimum of 80 inches (2032 mm) above the finish floor or ground surface measured to the bottom of the sign.*

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11B-502.6.1 Finish and size. *Parking identification signs shall be reflectorized with a minimum area of 70 square inches (45,161 mm^2).*

11B-502.6.2 Minimum fine. *Additional language or an additional sign below the International Symbol of Accessibility shall state "Minimum Fine $250".*

11B-502.6.3 Location. *A parking space identification sign shall be visible from each parking space. Signs shall be permanently posted either immediately adjacent to the parking space or within the projected parking space width at the head end of the parking space. Signs may also be permanently posted on a wall at the interior end of the parking space.*

11B-502.6.4 Marking. *Each accessible car and van space shall have surface identification complying with either Section 11B-502.6.4.1 or 11B-502.6.4.2.*

11B-502.6.4.1 *The parking space shall be marked with an International Symbol of Accessibility complying with Section 11B-703.7.2.1 in white on a blue background a minimum 36 inches wide by 36 inches high (914 mm by 914 mm). The centerline of the International Symbol of Accessibility shall be a maximum of 6 inches (152 mm) from the centerline of the parking space, its sides parallel to the length of the parking space and its lower corner at, or lower side aligned with, the end of the parking space length.*

11B-502.6.4.2 *The parking space shall be outlined in blue or painted blue and shall be marked with an International Symbol of Accessibility complying with Section 11B-703.7.2.1 a minimum 36 inches wide by 36 inches high (914 mm by 914 mm) in white or a suitable contrasting color. The centerline of the International Symbol of Accessibility shall be a maximum of 6 inches (152 mm) from the centerline of the parking space, its sides parallel to the length of the parking space and its lower corner at, or lower side aligned with, the end of the parking space.*

***11B*-502.7 Relationship to accessible routes.** Parking spaces and access aisles shall be designed so that cars and vans, when parked, cannot obstruct the required clear width of adjacent accessible routes.

11B-502.7.1 Arrangement. *Parking spaces and access aisles shall be designed so that persons using them are not required to travel behind parking spaces other than to pass behind the parking space in which they parked.*

11B-502.7.2 Wheel stops. *A curb or wheel stop shall be provided if required to prevent encroachment of vehicles over the required clear width of adjacent accessible routes.*

11B-502.8 Additional signs. *An additional sign shall be posted either; 1) in a conspicuous place at each entrance to an off-street parking facility or 2) immediately adjacent to on-site accessible parking and visible from each parking space.*

11B-502.8.1 Size. *The additional sign shall not be less than 17 inches (432 mm) wide by 22 inches (559 mm) high.*

11B-502.8.2 Lettering. *The additional sign shall clearly state in letters with a minimum height of 1 inch (25 mm) the following:*

"Unauthorized vehicles parked in designated accessible spaces not displaying distinguishing placards or special license plates issued for persons with disabilities will be towed away at the owner's expense. Towed vehicles may be reclaimed at: _____ or by telephoning _____."

Blank spaces shall be filled in with appropriate information as a permanent part of the sign.

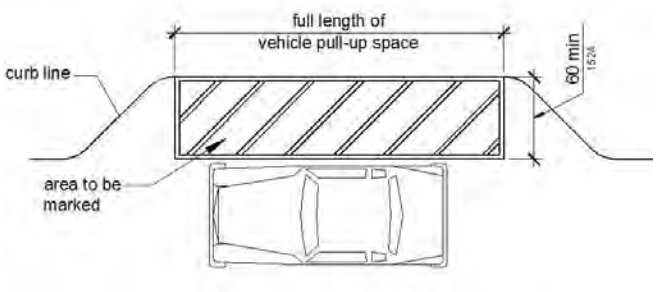
SECTION 11B-503—PASSENGER *DROP-OFF AND* LOADING ZONES

***11B*-503.1 General.** Passenger *drop-off and* loading zones shall comply with *Section 11B*-503.

***11B*-503.2 Vehicle pull-up space.** Passenger *drop-off and* loading zones shall provide a vehicular pull-up space 96 inches (*2438* mm) wide minimum and 20 feet (*6096* mm) long minimum.

***11B*-503.3 Access aisle.** Passenger *drop-off and* loading zones shall provide access aisles complying with *Section 11B*-503 adjacent *and parallel* to the vehicle pull-up space. Access aisles shall adjoin an accessible route and shall not overlap the vehicular way.

FIGURE *11B*-503.3—PASSENGER *DROP-OFF AND* LOADING ZONE ACCESS AISLE



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***11B*-503.3.1 Width.** Access aisles serving vehicle pull-up spaces shall be 60 inches (*1524* mm) wide minimum.

***11B*-503.3.2 Length.** Access aisles shall extend the full length of the vehicle pull-up spaces they serve.

***11B*-503.3.3 Marking.** Access aisles shall be marked *with a painted borderline around their perimeter. The area within the borderlines shall be marked with hatched lines a maximum of 36 inches (914 mm) on center in a color contrasting with that of the aisle surface.*

***11B*-503.4 Floor and ground surfaces.** Vehicle pull-up spaces and access aisles serving them shall comply with *Section 11B*-302. Access aisles shall be at the same level as the vehicle pull-up space they serve. Changes in level, *slopes exceeding 1:48, and detectable warnings shall not be permitted.*

Exception: *Reserved.*

***11B*-503.5 Vertical clearance.** Vehicle pull-up spaces, access aisles serving them and a vehicular route from an entrance to the passenger *drop-off and* loading zone and from the passenger *drop-off and* loading zone to a vehicular exit shall provide a vertical clearance of 114 inches (*2896* mm) minimum.

SECTION 11B-504—STAIRWAYS

***11B*-504.1 General.** Stairs shall comply with *Section 11B*-504.

***11B*-504.2 Treads and risers.** All steps on a flight of stairs shall have uniform riser heights and uniform tread depths. Risers shall be 4 inches (*102* mm) high minimum and 7 inches (*178* mm) high maximum. Treads shall be 11 inches (*279* mm) deep minimum.

Exception: *Curved stairways with winder treads are permitted at stairs which are not part of a required means of egress.*

***11B*-504.3 Open risers.** Open risers are not permitted.

Exceptions:

1. *On exterior stairways, an opening of not more than $^1/_2$ inch (12.7 mm) may be permitted between the base of the riser and the tread.*
2. *On exterior stairways, risers constructed of grating containing openings of not more than $^1/_2$ inch (12.7 mm) may be permitted.*

***11B*-504.4 Tread surface.** Stair treads shall comply with *Section 11B*-302. Changes in level, *slopes exceeding 1:48, and detectable warnings shall not be permitted.*

Exception: *Reserved.*

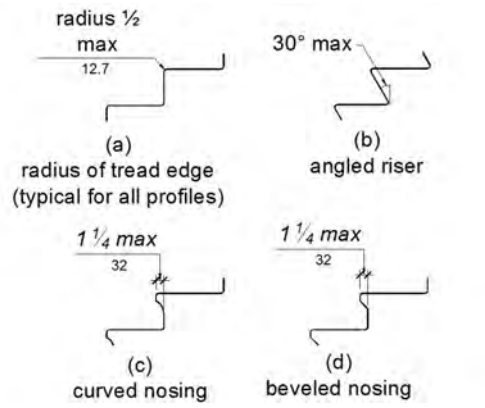
11B-504.4.1 Contrasting stripe. *Interior stairs shall have the upper approach and lower tread marked by a stripe providing clear visual contrast. Exterior stairs shall have the upper approach and all treads marked by a stripe providing clear visual contrast.*

The stripe shall be a minimum of 2 inches (51 mm) wide to a maximum of 4 inches (102 mm) wide placed parallel to, and not more than 1 inch (25 mm) from, the nose of the step or upper approach. The stripe shall extend the full width of the step or upper approach and shall be of material that is at least as slip resistant as the other treads of the stair. A painted stripe shall be acceptable. Grooves shall not be used to satisfy this requirement.

***11B*-504.5 Nosings.** The radius of curvature at the leading edge of the tread shall be $^1/_2$ inch (*12.7* mm) maximum. Nosings that project beyond risers shall have the underside of the leading edge curved or beveled. Risers shall be permitted to slope under the tread at an angle of 30 degrees maximum from vertical. The permitted projection of the nosing shall extend *$1^1/_4$ inches (32 mm)* maximum over the tread below.

Exception: *In existing buildings there is no requirement to retroactively alter existing nosing projections of $1^1/_2$ inches (38 mm) which were constructed in compliance with the building code in effect at the time of original construction.*

FIGURE *11B*-504.5—STAIR NOSINGS



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***11B*-504.6 Handrails.** Stairs shall have handrails complying with *Section 11B*-505.

***11B*-504.7 Wet conditions.** Stair treads and landings subject to wet conditions shall be designed to prevent the accumulation of water.

***11B-504.8 Floor identification.** Floor identification signs required by Chapter 10, Section 1023.9 complying with Sections 11B-703.1, 11B-703.2, 11B-703.3 and 11B-703.5 shall be located at the landing of each floor level, placed adjacent to the door on the latch side, in all enclosed stairways in buildings two or more stories in height to identify the floor level. At the exit discharge level, the sign shall include a raised five pointed star located to the left of the identifying floor level. The outside diameter of the star shall be the same as the height of the raised characters.*

SECTION 11B-505—HANDRAILS

***11B*-505.1 General.** Handrails provided along walking surfaces complying with *Section 11B*-403, required at ramps complying with *Section 11B*-405, and required at stairs complying with *Section 11B*-504 shall comply with *Section 11B*-505.

***11B*-505.2 Where required.** Handrails shall be provided on both sides of stairs and ramps.

Exceptions:

1. In assembly areas, handrails shall not be required on both sides of aisle ramps where a handrail is provided at either side or within the aisle width.
2. *Curb ramps do not require handrails.*
3. *At door landings, handrails are not required when the ramp run is less than 6 inches (152 mm) in rise or 72 inches (1829 mm) in length.*

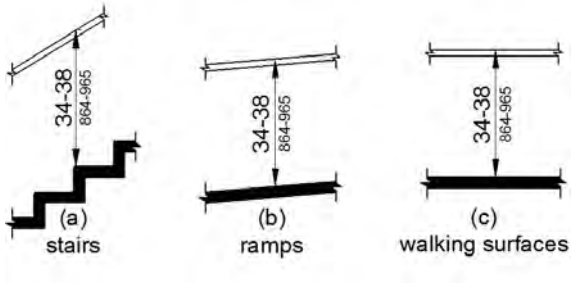
***11B-505.2.1 Orientation.** The orientation of at least one handrail shall be in the direction of the stair run, perpendicular to the direction of the stair nosing, and shall not reduce the minimum required width of the stair.*

***11B*-505.3 Continuity.** Handrails shall be continuous within the full length of each stair flight or ramp run. Inside handrails on switchback or dogleg stairs and ramps shall be continuous between flights or runs.

Exception: In assembly areas, *ramp* handrails *adjacent to seating or within the aisle width* shall not be required to be continuous in aisles serving seating.

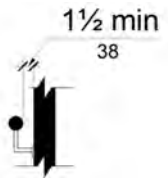
***11B*-505.4 Height.** Top of gripping surfaces of handrails shall be 34 inches (*864* mm) minimum and 38 inches (965 mm) maximum vertically above walking surfaces, stair nosings and ramp surfaces. Handrails shall be at a consistent height above walking surfaces, stair nosings and ramp surfaces.

FIGURE *11B*-505.4—HANDRAIL HEIGHT



***11B*-505.5 Clearance.** Clearance between handrail gripping surfaces and adjacent surfaces shall be $1^1/_2$ inches (38 mm) minimum. *Handrails may be located in a recess if the recess is 3 inches (76 mm) maximum deep and 18 inches (457 mm) minimum clear above the top of the handrail.*

FIGURE *11B*-505.5—HANDRAIL CLEARANCE



***11B*-505.6 Gripping surface.** Handrail gripping surfaces shall be continuous along their length and shall not be obstructed along their tops or sides. The bottoms of handrail gripping surfaces shall not be obstructed for more than 20 percent of their length. Where provided, horizontal projections shall occur $1^1/_2$ inches (38 mm) minimum below the bottom of the handrail gripping surface.

Exceptions:

1. Where handrails are provided along walking surfaces with slopes not steeper than 1:20, the bottoms of handrail gripping surfaces shall be permitted to be obstructed along their entire length where they are integral to crash rails or bumper guards.

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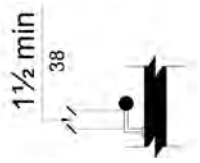
2. The distance between horizontal projections and the bottom of the gripping surface shall be permitted to be reduced by $^1/_8$ inch (3.2 mm) for each $^1/_2$ inch (*12.7* mm) of additional handrail perimeter dimension that exceeds 4 inches (*102* mm).

FIGURE *11B*-505.6—HORIZONTAL PROJECTIONS BELOW GRIPPING SURFACE

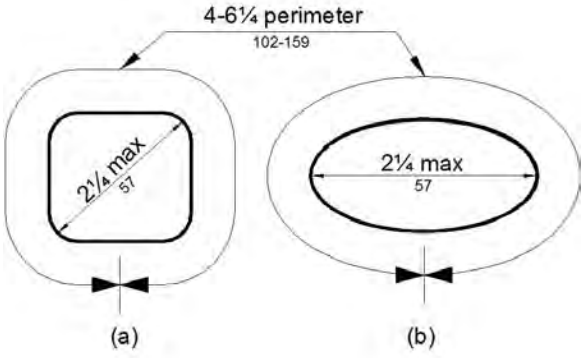


***11B*-505.7 Cross section.** Handrail gripping surfaces shall have a cross section complying with *Section 11B*-505.7.1 or *11B*-505.7.2.

***11B*-505.7.1 Circular cross section.** Handrail gripping surfaces with a circular cross section shall have an outside diameter of $1^1/_4$ inches (32 mm) minimum and 2 inches (51 mm) maximum.

***11B*-505.7.2 Non-circular cross sections.** Handrail gripping surfaces with a non-circular cross section shall have a perimeter dimension of 4 inches (*102* mm) minimum and $6^1/_4$ inches (*159* mm) maximum, and a cross-section dimension of $2^1/_4$ inches (57 mm) maximum.

FIGURE *11B*-505.7.2—HANDRAIL NON-CIRCULAR CROSS SECTION



***11B*-505.8 Surfaces**. Handrail gripping surfaces and any surfaces adjacent to them shall be free of sharp or abrasive elements and shall have rounded edges.

***11B*-505.9 Fittings.** Handrails shall not rotate within their fittings.

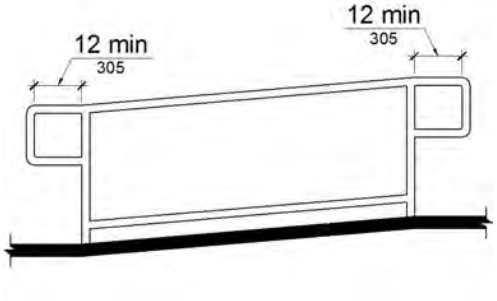
***11B*-505.10 Handrail extensions.** Handrail gripping surfaces shall extend beyond and in the same direction of stair flights and ramp runs in accordance with *Section 11B*-505.10.

Exceptions:

1. Extensions shall not be required for continuous handrails at the inside turn of switchback or dogleg stairs and ramps.
2. In assembly areas, extensions shall not be required for ramp handrails in aisles serving seating where the handrails are discontinuous to provide access to seating and to permit crossovers within aisles.
3. In alterations, *where the extension of the handrail in the direction of stair flight or ramp run would create a hazard, the extension of the handrail may be turned 90 degrees from the direction of stair flight or ramp run.*

***11B*-505.10.1 Top and bottom extension at ramps.** Ramp handrails shall extend horizontally above the landing for 12 inches (305 mm) minimum beyond the top and bottom of ramp runs. Extensions shall return to a wall, guard or the landing surface, or shall be continuous to the handrail of an adjacent ramp run.

FIGURE *11B*-505.10.1—TOP AND BOTTOM HANDRAIL EXTENSION AT RAMPS



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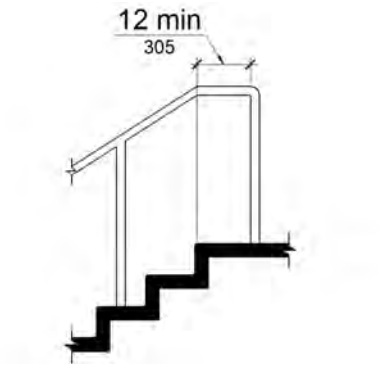
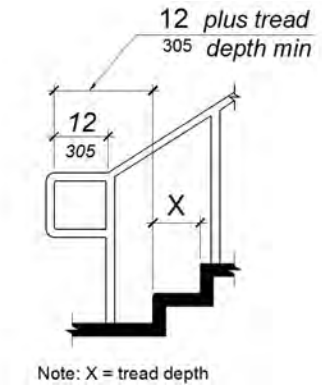
***11B*-505.10.2 Top extension at stairs.** At the top of a stair flight, handrails shall extend horizontally above the landing for 12 inches (305 mm) minimum beginning directly above the first riser nosing. Extensions shall return to a wall, guard or the landing surface, or shall be continuous to the handrail of an adjacent stair flight.

FIGURE *11B*-505.10.2—TOP HANDRAIL EXTENSION AT STAIRS



***11B*-505.10.3 Bottom extension at stairs.** At the bottom of a stair flight, handrails shall extend at the slope of the stair flight for a horizontal distance equal to one tread depth beyond the last riser nosing. *The horizontal extension of a handrail shall be 12 inches (305 mm) long minimum and a height equal to that of the sloping portion of the handrail as measured above the stair nosings.* Extension shall return to a wall, guard or the landing surface, or shall be continuous to the handrail of an adjacent stair flight.

FIGURE *11B*-505.10.3—BOTTOM HANDRAIL EXTENSION AT STAIRS



DIVISION 6: PLUMBING ELEMENTS AND FACILITIES

SECTION 11B-601—GENERAL

***11B*-601.1 Scope.** The provisions of *Division* 6 shall apply where required by *Division* 2 or where referenced by a requirement in this *chapter.*

SECTION 11B-602—DRINKING FOUNTAINS *AND BOTTLE-FILLING STATIONS*

***11B*-602.1 General.** Drinking fountains shall comply with *Sections 11B*-307 and *11B*-602*.*

***11B*-602.2 Clear floor space.** Units shall have a clear floor or ground space complying with *Section 11B*-305 positioned for a forward approach and centered on the unit. Knee and toe clearance complying with *Section 11B*-306 shall be provided.

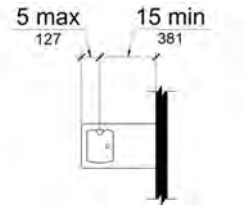
Exception: A parallel approach complying with *Section 11B*-305 shall be permitted at units for children's use where the spout is 30 inches (*762* mm) maximum above the finish floor or ground and is $3^1/_2$ inches (*89* mm) maximum from the front edge of the unit, including bumpers.

***11B*-602.3 Operable parts.** Operable parts shall comply with *Section 11B*-309*. The flow of water shall be activated by a manually operated system that is front mounted or side mounted and located within 6 inches (152 mm) of the front edge of the fountain or an automatic electronically controlled device.*

***11B*-602.4 Spout height.** Spout outlets shall be 36 inches (*914* mm) maximum above the finish floor or ground.

***11B*-602.5 Spout location.** The spout shall be located 15 inches (*381* mm) minimum from the vertical support and 5 inches (*127* mm) maximum from the front edge of the unit, including bumpers.

FIGURE *11B*-602.5—DRINKING FOUNTAIN SPOUT LOCATION



***11B*-602.6 Water flow.** The spout shall provide a flow of water 4 inches (*102* mm) high minimum and shall be located 5 inches (*127* mm) maximum from the front of the unit. The angle of the water stream shall be measured horizontally relative to the front face of the unit. Where spouts are located less than 3 inches (*76* mm) of the front of the unit, the angle of the water stream shall be 30 degrees maximum. Where spouts are located between 3 inches (*76* mm) and 5 inches (*127* mm) maximum from the front of the unit, the angle of the water stream shall be 15 degrees maximum.

***11B*-602.7 Drinking fountains for standing persons.** Spout outlets of drinking fountains for standing persons shall be 38 inches (965 mm) minimum and 43 inches (*1092* mm) maximum above the finish floor or ground.

***11B-602.8 Depth.** Wall- and post-mounted cantilevered drinking fountains shall be 18 inches (457 mm) minimum and 19 inches (483 mm) maximum in depth.*

***11B-602.9 Pedestrian protection.** All drinking fountains shall either be located completely within alcoves, positioned completely between wing walls, or otherwise positioned so as not to encroach into pedestrian ways. The protected area within which a drinking fountain is located shall be 32 inches (813 mm) wide minimum and 18 inches (457 mm) deep minimum, and shall comply with Section 11B-305.7. When used, wing walls or barriers shall project horizontally at least as far as the drinking fountain and to within 6 inches (152 mm) vertically from the floor or ground surface.*

***11B-602.10 Bottle-filling stations.** Bottle-filling stations shall comply with Sections 11B-307 and 11B-309.*

***Exception:** Where bottle-filling stations are provided at a drinking fountain for standing persons, the bottle-filling station is not required to comply with this section provided a bottle-filling station is located at the drinking fountain complying with Sections 11B-602.2 through 11B-602.6.*

SECTION 11B-603—TOILET AND BATHING ROOMS

***11B*-603.1 General.** Toilet and bathing rooms shall comply with *Section 11B*-603*.*

***11B*-603.2 Clearances.** Clearances shall comply with *Section 11B*-603.2.

***11B*-603.2.1 Turning space.** Turning space complying with *Section 11B*-304 shall be provided within the room.

***11B*-603.2.2 Overlap.** Required clear floor spaces, clearance at fixtures and turning space shall be permitted to overlap.

***11B*-603.2.3 Door swing.** Doors shall not swing into the clear floor space or clearance required for any fixture. *Doors to accessible water closet compartments shall be permitted to encroach into the turning space without limitation. Other than doors to accessible*

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water closet compartments, a door, in any position, shall be permitted to encroach into the turning space by 12 inches (305 mm) maximum.

Exceptions:

1. ***Reserved.***
2. Where the toilet room or bathing room is for individual use and a clear floor space complying with *Section 11B*-305.3 is provided within the room beyond the arc of the door swing, doors shall be permitted to swing into the clear floor space or clearance required for any fixture.
3. *In residential dwelling units complying with Section 11B-233.3.1.1, doors shall be permitted to swing over the turning space without limitation.*

***11B*-603.3 Mirrors.** Mirrors located above lavatories or countertops shall be installed with the bottom edge of the reflecting surface 40 inches (*1016* mm) maximum above the finish floor or ground. Mirrors not located above lavatories or countertops shall be installed with the bottom edge of the reflecting surface 35 inches (*889* mm) maximum above the finish floor or ground.

11B*-603.4 Coat hooks, shelves *and medicine cabinets. Coat hooks shall be located within one of the reach ranges specified in *Section 11B*-308. Shelves shall be located 40 inches (*1016* mm) minimum and 48 inches (*1219* mm) maximum above the finish floor. *Medicine cabinets shall be located with a usable shelf no higher than 44 inches (1118 mm) maximum above the finish floor.*

11B-603.5 Accessories. *Where towel or sanitary napkin dispensers, waste receptacles or other accessories are provided in toilet facilities, at least one of each type shall be located on an accessible route. All operable parts, including coin slots, shall be 40 inches (1016 mm) maximum above the finish floor.*

Exception: *Baby diaper changing stations are not required to comply with Section 11B-603.5.*

11B-603.6 Guest room toilet and bathing rooms. *In transient lodging facilities, toilet and bathing rooms within guest rooms that are not required to provide mobility features complying with Section 11B-806.2 shall provide all toilet and bathing fixtures in a location that allows a person using a wheelchair measuring 30 inches by 48 inches (762 mm by 1219 mm) to touch the wheelchair to any lavatory, urinal, water closet, tub, sauna, shower stall and any other similar sanitary installation, if provided.*

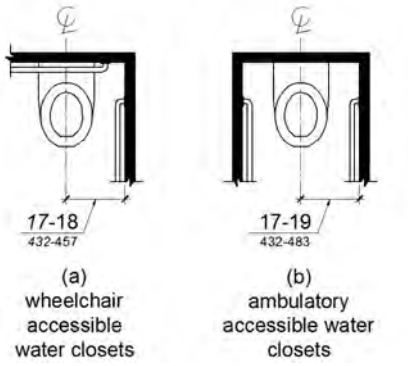
SECTION 11B-604—WATER CLOSETS AND TOILET COMPARTMENTS

***11B*-604.1 General.** Water closets and toilet compartments shall comply with *Sections 11B*-604.2 through *11B*-604.8.

Exception: Water closets and toilet compartments for children's use shall be permitted to comply with *Section 11B*-604.9.

***11B*-604.2 Location.** The water closet shall be positioned with a wall or partition to the rear and to one side. The centerline of the water closet shall be *17 inches* (*432 mm*) minimum to 18 inches (*457* mm) maximum from the side wall or partition, except that the water closet shall be 17 inches (*432* mm) minimum and 19 inches (*483* mm) maximum from the side wall or partition in the ambulatory accessible toilet compartment specified in *Section 11B*-604.8.2. Water closets shall be arranged for a left-hand or right-hand approach.

FIGURE *11B*-604.2—WATER CLOSET LOCATION

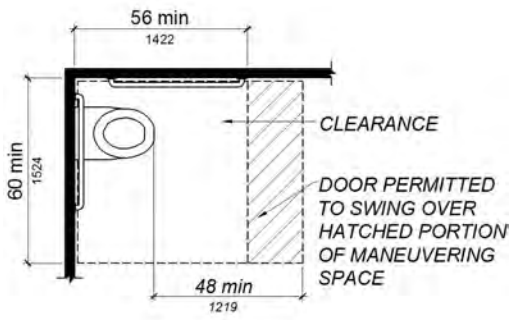


***11B*-604.3 Clearance.** Clearances around water closets and in toilet compartments shall comply with *Section 11B*-604.3.

***11B*-604.3.1 Size.** Clearance around a water closet shall be 60 inches (*1524* mm) minimum measured perpendicular from the side wall and 56 inches (*1422* mm) minimum measured perpendicular from the rear wall. *A minimum 60 inches (1524 mm) wide and 48 inches (1219 mm) deep maneuvering space shall be provided in front of the water closet.*

Exception: *In residential dwelling units complying with Section 11B-233.3.1.1, maneuvering space in front of the water closet shall be a minimum 60 inches (1524 mm) wide and 36 inches (914 mm) deep.*

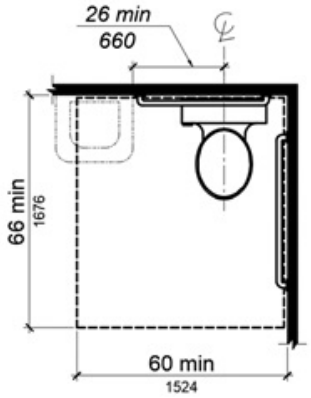
FIGURE *11B*-604.3.1—SIZE OF CLEARANCE AT WATER CLOSETS



***11B*-604.3.2 Overlap.** The required clearance around the water closet shall be permitted to overlap the water closet, associated grab bars, dispensers, sanitary napkin disposal units, coat hooks, shelves, accessible routes, clear floor space and clearances required at other fixtures and the turning space. No other fixtures or obstructions shall be located within the required water closet clearance.

Exception: In residential dwelling units, a lavatory complying with *Section 11B*-606 shall be permitted on the rear wall *26 inches (660 mm)* minimum from the water closet centerline *to allow for the installation of a grab bar* where the clearance at the water closet is 66 inches (*1676* mm) minimum measured perpendicular from the rear wall.

FIGURE *11B*-604.3.2 (EXCEPTION)—OVERLAP OF WATER CLOSET CLEARANCE IN RESIDENTIAL DWELLING UNITS



***11B*-604.4 Seats.** The seat height of a water closet above the finish floor shall be 17 inches (*432* mm) minimum and 19 inches (*483* mm) maximum measured to the top of the seat. Seats shall not be sprung to return to a lifted position. *Seats shall be 2 inches (51 mm) high maximum.*

Exceptions:

1. ***Reserved.***
2. In residential dwelling units, the height of water closets shall be permitted to be 15 inches (*381* mm) minimum and 19 inches (*483* mm) maximum above the finish floor measured to the top of the seat.
3. *A 3-inch (76 mm) high seat shall be permitted only in alterations where the existing fixture is less than 15 inches (381 mm) high.*

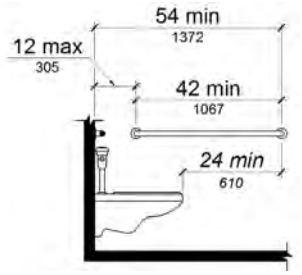
***11B*-604.5 Grab bars.** Grab bars for water closets shall comply with *Section 11B*-609. Grab bars shall be provided on the side wall closest to the water closet and on the rear wall. *Where separate grab bars are required on adjacent walls at a common mounting height, an L-shaped grab bar meeting the dimensional requirements of Sections 11B-604.5.1 and 11B-604.5.2 shall be permitted.*

Exceptions:

1. ***Reserved.***
2. In residential dwelling units, grab bars shall not be required to be installed in toilet or bathrooms provided that reinforcement has been installed in walls and located so as to permit the installation of grab bars complying with *Section 11B*-604.5.
3. In detention or correction facilities, grab bars shall not be required to be installed in housing or holding cells that are specially designed without protrusions for purposes of suicide prevention.

***11B*-604.5.1 Side wall.** The side wall grab bar shall be 42 inches (*1067* mm) long minimum, located 12 inches (305 mm) maximum from the rear wall and extending 54 inches (*1372* mm) minimum from the rear wall *with the front end positioned 24 inches (610 mm) minimum in front of the water closet.*

FIGURE *11B*-604.5.1—SIDE WALL GRAB BAR AT WATER CLOSETS

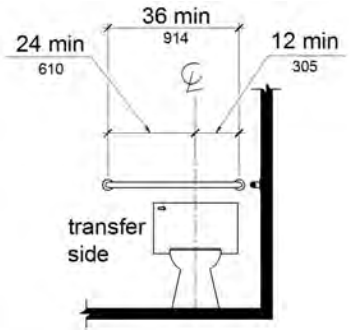


***11B*-604.5.2 Rear wall.** The rear wall grab bar shall be 36 inches (*914* mm) long minimum and extend from the centerline of the water closet 12 inches (305 mm) minimum on one side and 24 inches (610 mm) minimum on the other side.

Exceptions:

1. The rear grab bar shall be permitted to be 24 inches (610 mm) long minimum, centered on the water closet, where wall space does not permit a length of 36 inches (*914* mm) minimum due to the location of a recessed fixture adjacent to the water closet.
2. Where an administrative authority requires flush controls for flush valves to be located in a position that conflicts with the location of the rear grab bar, then the rear grab bar shall be permitted to be split or shifted to the open side of the toilet area.

FIGURE *11B*-604.5.2—REAR WALL GRAB BAR AT WATER CLOSETS

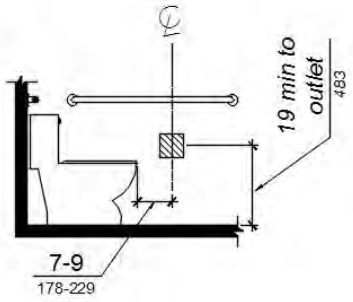


***11B*-604.6 Flush controls.** Flush controls shall be hand operated or automatic. Hand operated flush controls shall comply with *Section 11B-*309 *except they shall be located 44 inches (1118 mm) maximum above the floor.* Flush controls shall be located on the open side of the water closet except in ambulatory accessible compartments complying with *Section 11B-*604.8.2.

11B*-604.7 Dispensers *and disposal units. *Toilet paper dispensers and sanitary napkin disposal units shall comply with Section 11B-604.7. Combination accessory units are not permitted to encroach into the space required by Section 11B-609.3.*

11B-604.7.1 Dispensers. Toilet paper dispensers shall comply with *Section 11B-*309.4 and shall be 7 inches (*178* mm) minimum and 9 inches (*229* mm) maximum in front of the water closet measured to the centerline of the dispenser. The outlet of the dispenser shall be *below the grab bar, 19 inches (483 mm) minimum* above the finish floor and shall not be located behind grab bars. Dispensers shall not be of a type that controls delivery or that does not allow continuous paper flow.

FIGURE *11B*-604.7.*1*—DISPENSER OUTLET LOCATION



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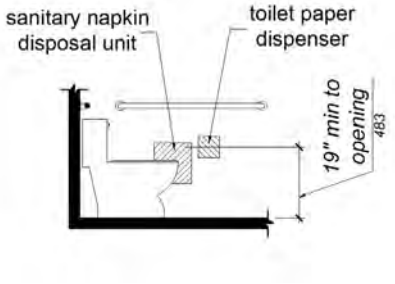
11B-604.7.2 Disposal units. *Sanitary napkin disposal units, if provided, shall comply with Section 11B-309.4 and shall be wall mounted and located on the sidewall between the rear wall of the toilet and the toilet paper dispenser, adjacent to the toilet paper dispenser. The disposal unit shall be located below the grab bar with the opening of the disposal unit 19 inches minimum (483 mm) above the finish floor.*

FIGURE 11B-604.7.2—DISPOSAL UNIT LOCATION



***11B*-604.8 Toilet compartments.** Wheelchair accessible toilet compartments shall meet the requirements of *Sections 11B*-604.8.1 and *11B*-604.8.3. Compartments containing more than one plumbing fixture shall comply with *Section 11B*-603. Ambulatory accessible compartments shall comply with *Sections 11B*-604.8.2 and *11B*-604.8.3.

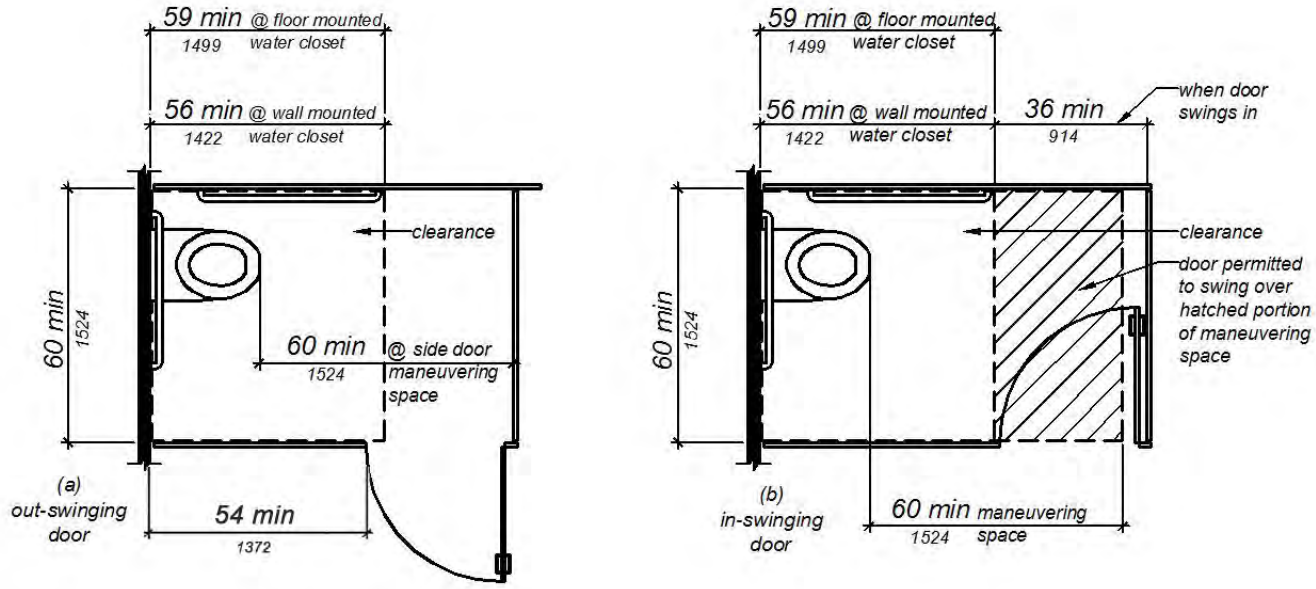
***11B*-604.8.1 Wheelchair accessible compartments.** Wheelchair accessible compartments shall comply with *Section 11B*-604.8.1.

***11B*-604.8.1.1 Size.** Wheelchair accessible compartments shall be 60 inches (*1524* mm) wide minimum measured perpendicular to the side wall, and 56 inches (*1422* mm) deep minimum for wall hung water closets and 59 inches (*1499* mm) deep minimum for floor mounted water closets measured perpendicular to the rear wall. *Wheelchair accessible compartments shall additionally provide maneuvering space complying with Section 11B-604.8.1.1.1, 11B-604.8.1.1.2 or 11B-604.8.1.1.3, as applicable.* Wheelchair accessible compartments for children's use shall be 60 inches (*1524* mm) wide minimum measured perpendicular to the side wall, and 59 inches (*1499* mm) deep minimum for wall hung and floor mounted water closets measured perpendicular to the rear wall.

11B-604.8.1.1.1 Maneuvering space with in-swinging door. *In a wheelchair accessible compartment with an in-swinging door, a minimum 60 inches (1524 mm) wide by 36 inches (914 mm) deep maneuvering space shall be provided in front of the clearance required in Section 11B-604.8.1.1. See Figures 11B-604.8.1.1.2 (b) and 11B-604.8.1.1.3 (b).*

11B-604.8.1.1.2 Maneuvering space with side-opening door. *In a wheelchair accessible compartment with a door located in the side wall or partition, either in-swinging or out-swinging, a minimum 60 inches (1524 mm) wide and 60 inches (1524 mm) deep maneuvering space shall be provided in front of the water closet. See Figure 11B-604.8.1.1.2.*

FIGURE 11B-604.8.1.1.2—MANEUVERING SPACE WITH SIDE-OPENING DOOR



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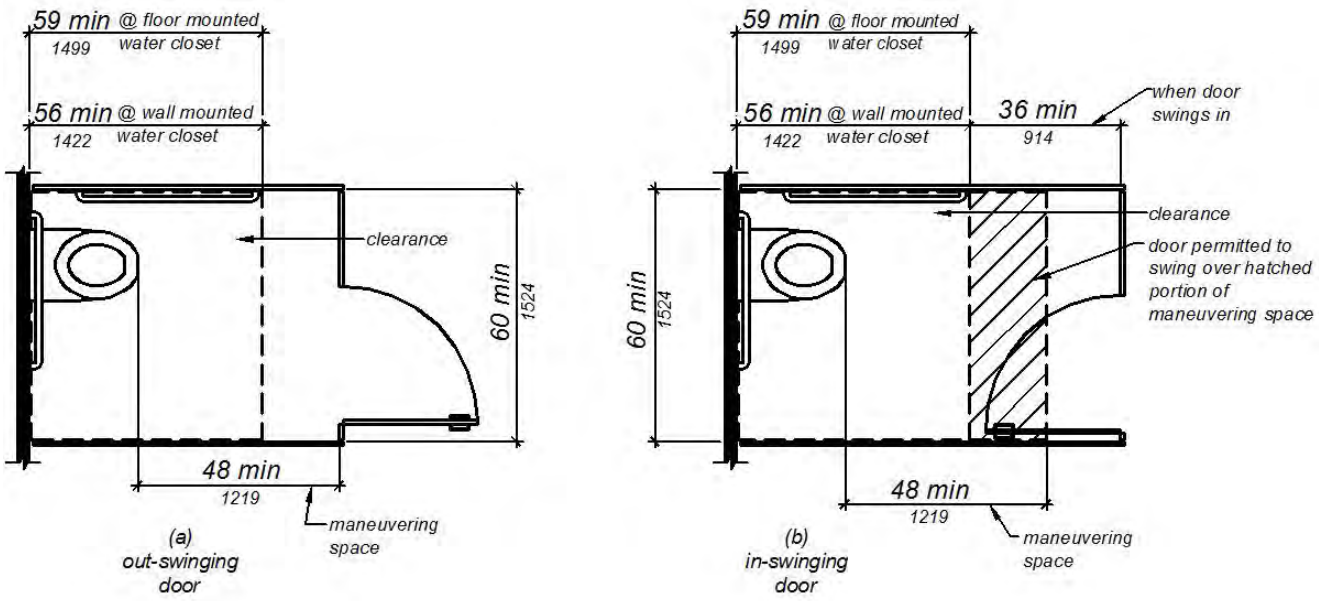
11B-604.8.1.1.3 Maneuvering space with end-opening door. *In a wheelchair accessible compartment with a door located in the front wall or partition (facing the water closet), either in-swinging or out-swinging, a minimum 60 inches (1524 mm) wide and 48 inches (1219 mm) deep maneuvering space shall be provided in front of the water closet. See Figure 11B-604.8.1.1.3.*

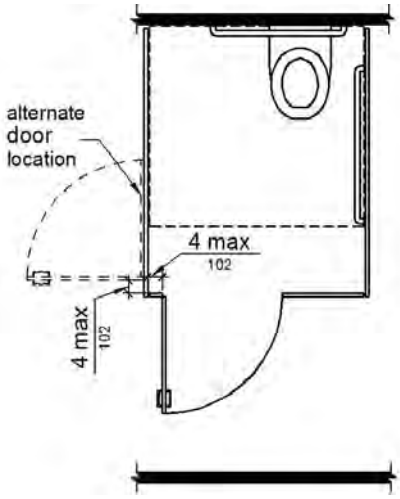
FIGURE 11B-604.8.1.1.3—MANEUVERING SPACE WITH END-OPENING DOOR



***11B*-604.8.1.2 Doors.** Toilet compartment doors, including door hardware, shall comply with *Section 11B*-404 except that if the approach is *from the push side* of the compartment door, clearance between the door side of the compartment and any obstruction shall be *48 inches (1219 mm)* minimum *measured perpendicular to the compartment door in its closed position.* Doors shall be located in the front partition or in the side wall or partition farthest from the water closet. Where located in the front partition, the door opening shall be 4 inches (*102* mm) maximum from the side wall or partition farthest from the water closet. Where located in the side wall or partition, *the door opening shall be farthest from the water closet and shall be 54 inches (1372 mm) minimum from the rear wall.* The door shall be self-closing *and have a privacy latch.* A door pull complying with *Section 11B*-404.2.7 shall be placed on both sides of the door near the latch. *Doors shall not swing into the clear floor space or clearance required for any fixture. Doors may swing into that portion of maneuvering space which does not overlap the clearance required at a water closet.*

Exception: *When located at the side of a toilet compartment, the toilet compartment door opening shall provide a clear width of 34 inches (864 mm) minimum.*

FIGURE *11B*-604.8.1.2—WHEELCHAIR ACCESSIBLE TOILET COMPARTMENT DOORS



***11B*-604.8.1.3 Approach.** Compartments shall be arranged for left-hand or right-hand approach to the water closet.

***11B*-604.8.1.4 Toe clearance.** *At* least one side partition shall provide a toe clearance of 9 inches (*229* mm) minimum above the finish floor and 6 inches (*152* mm) deep minimum beyond the compartment-side face of the partition, exclusive of partition

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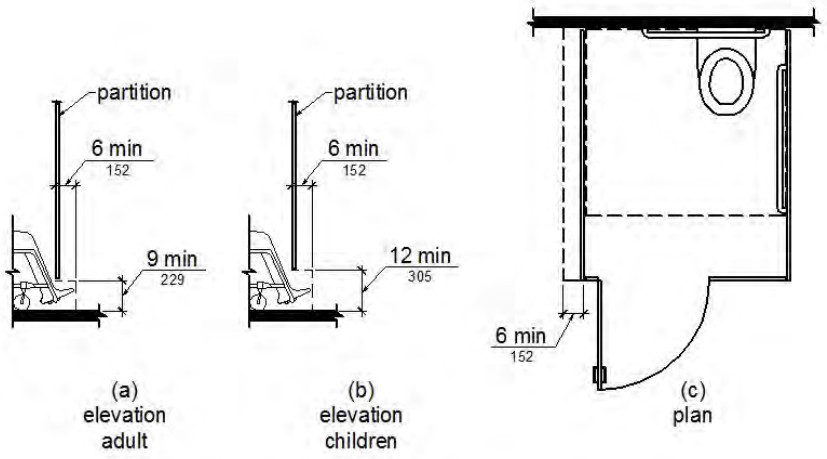
support members. *Partition components at toe clearances shall be smooth without sharp edges or abrasive surfaces.* Compartments for children's use shall provide a toe clearance of 12 inches (305 mm) minimum above the finish floor.

Exception: Toe clearance at the side partition is not required in a compartment greater than 66 inches (*1676* mm) wide.

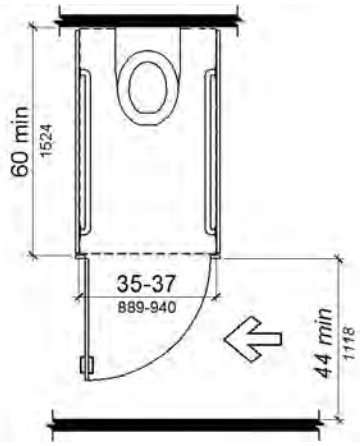
FIGURE *11B*-604.8.1.4—WHEELCHAIR ACCESSIBLE TOILET COMPARTMENT TOE CLEARANCE



***11B*-604.8.1.5 Grab bars.** Grab bars shall comply with *Section 11B*-609. A side-wall grab bar complying with *Section 11B*-604.5.1 shall be provided and shall be located on the wall closest to the water closet. In addition, a rear-wall grab bar complying with *Section 11B*-604.5.2 shall be provided. *Where separate grab bars are required on adjacent walls at a common mounting height, an L-shaped grab bar meeting the dimensional requirements of Sections 11B-604.5.1 and 11B-604.5.2 shall be permitted.*

***11B*-604.8.2 Ambulatory accessible compartments.** Ambulatory accessible compartments shall comply with *Section 11B*-604.8.2.

***11B*-604.8.2—AMBULATORY ACCESSIBLE TOILET COMPARTMENT**



***11B*-604.8.2.1 Size.** Ambulatory accessible compartments shall have a depth of 60 inches (*1524* mm) minimum and a width of 35 inches (*889* mm) minimum and 37 inches (940 mm) maximum.

***11B*-604.8.2.2 Doors.** Toilet compartment doors, including door hardware, shall comply with *Section 11B*-404, except that if the approach is to the latch side of the compartment door, clearance between the door side of the compartment and any obstruction shall be *44 inches (1118 mm)* minimum. The door shall be self-closing *and have a privacy latch.* A door pull complying with *Section 11B*-404.2.7 shall be placed on both sides of the door near the latch. Toilet compartment doors shall not swing into the minimum required compartment area.

***11B*-604.8.2.3 Grab bars.** Grab bars shall comply with *Section 11B*-609. A side-wall grab bar complying with *Section 11B*-604.5.1 shall be provided on both sides of the compartment.

***11B*-604.8.3 Coat hooks and shelves.** Coat hooks shall be located within one of the reach ranges specified in *Section 11B*-308. Shelves shall be located 40 inches (*1016* mm) minimum and 48 inches (*1219* mm) maximum above the finish floor.

***11B*-604.9 Water closets and toilet compartments for children's use.** Water closets and toilet compartments for children's use shall comply with *Section 11B*-604.9. *When the exception in Section 11B-604.1 is used, the suggested dimensions of Table 11B-604.9 for a single age group shall be applied consistently to the installation of a water closet and all associated components.*

TABLE 11B-604.9—SUGGESTED DIMENSIONS FOR CHILDREN'S USE			
***SUGGESTED DIMENSIONS* FOR WATER CLOSETS SERVING CHILDREN AGES 3 THROUGH 12**			
	Ages 3 and 4	**Ages 5 through 8**	**Ages 9 through 12**
Water Closet Centerline	12 inches (305 mm)	12 to 15 inches (305 to *381* mm)	15 to 18 inches (*381* to *457* mm)
Toilet Seat Height	11 to 12 inches (*279* to 305 mm)	12 to 15 inches (305 to *381* mm)	15 to 17 inches (*381* to *432* mm)
Grab Bar Height	18 to 20 inches (*457* to *508* mm)	20 to 25 inches (*508* to 635 mm)	25 to 27 inches (635 to *686* mm)
Dispenser Height	14 inches (*356* mm)	14 to 17 inches (*356* to *432* mm)	17 to 19 inches (*432* to *483* mm)

***11B*-604.9.1 Location.** The water closet shall be located with a wall or partition to the rear and to one side. The centerline of the water closet shall be 12 inches (305 mm) minimum and 18 inches (*457* mm) maximum from the side wall or partition, except that the water closet shall be 17 inches (*432* mm) minimum and 19 inches (*483* mm) maximum from the side wall or partition in the ambulatory accessible toilet compartment specified in *Section 11B*-604.8.2. Compartments shall be arranged for left-hand or right-hand approach to the water closet.

***11B*-604.9.2 Clearance.** Clearance around a water closet shall comply with *Section 11B*-604.3.

***11B*-604.9.3 Height.** The height of water closets shall be 11 inches (*279* mm) minimum and 17 inches (*432* mm) maximum measured to the top of the seat. Seats shall not be sprung to return to a lifted position.

***11B*-604.9.4 Grab bars.** Grab bars for water closets shall comply with *Section 11B*-604.5.

***11B*-604.9.5 Flush controls.** Flush controls shall be hand operated or automatic. Hand operated flush controls shall comply with *Sections 11B*-309.2 and *11B*-309.4 and shall be installed 36 inches (*914* mm) maximum above the finish floor. Flush controls shall be located on the open side of the water closet except in ambulatory accessible compartments complying with *Section 11B*-604.8.2.

***11B*-604.9.6 Dispensers.** Toilet paper dispensers shall comply with *Section 11B*-309.4 and shall be 7 inches (*178* mm) minimum and 9 inches (*229* mm) maximum in front of the water closet measured to the centerline of the dispenser. The outlet of the dispenser shall be 14 inches (*356* mm) minimum and 19 inches (*483* mm) maximum above the finish floor. There shall be a clearance of $1^1/_2$ inches (38 mm) minimum below the grab bar. Dispensers shall not be of a type that controls delivery or that does not allow continuous paper flow.

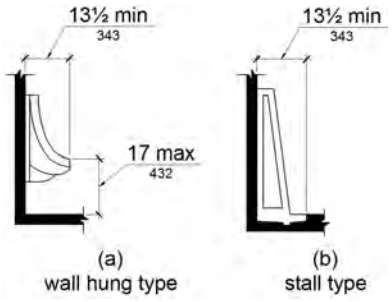
***11B*-604.9.7 Toilet compartments.** Toilet compartments shall comply with *Section 11B*-604.8.

SECTION 11B-605—URINALS

***11B*-605.1 General.** Urinals *not provided in urinal compartments* shall comply with *Sections 11B-605.1 through 11B-605.4. Urinals provided in urinal compartments shall comply with Sections 11B-605.1 through 11B-605.5.*

***11B*-605.2 Height and depth.** Urinals shall be the stall-type or the wall-hung type with the rim 17 inches (*432* mm) maximum above the finish floor or ground. Urinals shall be $13^1/_2$ inches (*343* mm) deep minimum measured from the outer face of the urinal rim to the back of the fixture.

FIGURE *11B*-605.2—HEIGHT AND DEPTH OF URINALS

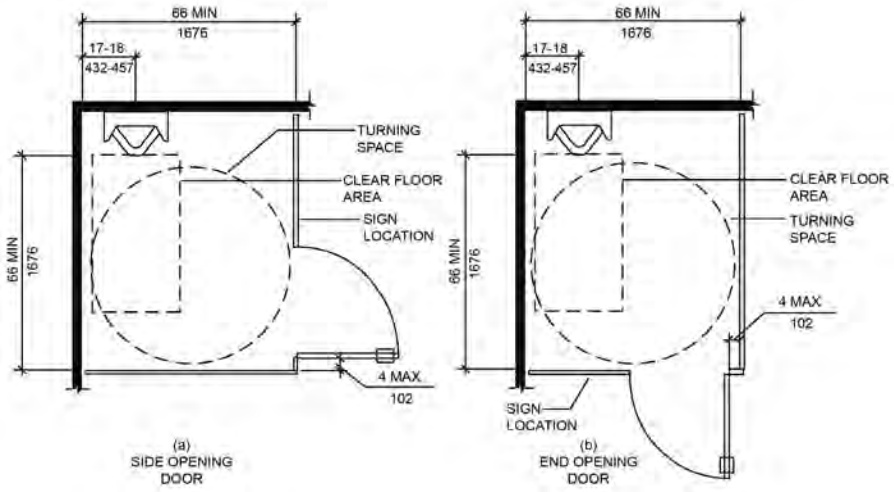


***11B*-605.3 Clear floor space.** A clear floor or ground space complying with *Section 11B*-305 positioned for forward approach shall be provided.

***11B*-605.4 Flush controls.** Flush controls shall be hand operated or automatic. Hand operated flush controls shall comply with *Section 11B-309 except that the flush control shall be mounted at a maximum height of 44 inches (1118 mm) above the finish floor. Urinals provided in urinal compartments and with hand operated flush controls shall have the controls located on the open side of the urinal.*

11B-605.5 Urinal compartments. *Wheelchair accessible urinal compartments shall comply with Section 11B-605.5. Compartments containing more than one plumbing fixture shall comply with Section 11B-603.*

FIGURE 11B-605.5—URINAL COMPARTMENT



11B-605.5.1 Urinal location. *Urinals in compartments shall have the centerline of the urinal located 17 inches (432 mm) minimum to 18 inches (457 mm) maximum from the side wall or partition. Urinals shall be arranged for a left-hand or right-hand approach.*

11B-605.5.2 Maneuvering clearance. *A minimum 66 inches (1676 mm) wide and 66 inches (1676 mm) deep maneuvering space shall be provided in front of the urinal. A turning space complying with Section 11B-304 shall be provided within the compartment.*

Exception: *Where toe clearance complying with Section 11B-605.5.4 is provided, the required maneuvering space in front of the urinal fixture shall be permitted to be reduced to 60 inches (1524 mm) minimum wide and 60 inches (1524 mm) minimum deep.*

11B-605.5.3 Doors. *Urinal compartment doors, including door hardware, shall comply with Section 11B-404 except that if the approach is from the push side of the compartment door, clearance between the door side of the compartment and any obstruction shall be 48 inches (1219 mm) minimum measured perpendicular to the compartment door in its closed position. Doors shall be located in the front partition or in the side wall or partition farthest from the urinal. Where located in the front partition, the door opening shall be 4 inches (102 mm) maximum from the side wall or partition farthest from the urinal. Where located in the side wall or partition, the door opening shall be 4 inches maximum (102 mm) from the front partition. The urinal compartment door shall be out-swinging, self-closing and have a privacy latch. Door pulls complying with Section 11B-404.2.7 shall be placed on both sides of the door near the latch.*

Exception: *When located at the side wall or partition of a urinal compartment, the compartment door opening shall provide a clear width of 34 inches (864 mm) minimum.*

11B-605.5.4 Toe clearance. *The front partition and at least one side partition shall provide a toe clearance of 9 inches (229 mm) minimum above the finish floor and 6 inches (152 mm) deep minimum beyond the compartment-side face of the partition, exclusive of partition support members. Partition components at toe clearances shall be smooth without sharp edges or abrasive surfaces. Compartments for children's use shall provide a toe clearance of 12 inches (305 mm) minimum above the finish floor.*

SECTION 11B-606—LAVATORIES AND SINKS

***11B*-606.1 General.** Lavatories and sinks shall comply with *Section 11B*-606.

***11B*-606.2 Clear floor space.** A clear floor space complying with *Section 11B*-305, positioned for a forward approach, and knee and toe clearance complying with *Section 11B*-306 shall be provided.

Exceptions:

1. A parallel approach complying with *Section 11B*-305 shall be permitted to a kitchen sink in a space where a cook top or conventional range is not provided and to wet bars.
2. ***Reserved.***
3. In residential dwelling units, cabinetry shall be permitted under lavatories and kitchen sinks provided that all of the following conditions are met:
   (a) the cabinetry can be removed without removal or replacement of the fixture;
   (b) the finish floor extends under the cabinetry; and
   (c) the walls behind and surrounding the cabinetry are finished.
4. A knee clearance of 24 inches (610 mm) minimum above the finish floor or ground shall be permitted at lavatories and sinks used primarily by children 6 through 12 years where the rim or counter surface is 31 inches (*787* mm) maximum above the finish floor or ground.

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5. A parallel approach complying with *Section 11B-*305 shall be permitted to lavatories and sinks used primarily by children 5 years and younger.
6. The dip of the overflow shall not be considered in determining knee and toe clearances.
7. No more than one bowl of a multibowl sink shall be required to provide knee and toe clearance complying with *Section 11B-*306*.*

***11B*-606.3 Height.** Lavatories and sinks shall be installed with the front of the higher of the rim or counter surface 34 inches (*864* mm) maximum above the finish floor or ground.

Exceptions:

1. ***Reserved.***
2. In residential dwelling unit kitchens, sinks that are adjustable to variable heights, 29 inches (*737* mm) minimum and 36 inches (*914* mm) maximum, shall be permitted where rough-in plumbing permits connections of supply and drain pipes for sinks mounted at the height of 29 inches (*737* mm).

***11B*-606.4 Faucets.** Controls for faucets shall comply with *Section 11B-309.* Hand-operated metering faucets shall remain open for 10 seconds minimum.

***11B*-606.5 Exposed pipes and surfaces.** Water supply and drain pipes under lavatories and sinks shall be insulated or otherwise configured to protect against contact. There shall be no sharp or abrasive surfaces under lavatories and sinks.

11B-606.6 Adjacent side wall or partition. *Lavatories, when located adjacent to a side wall or partition, shall be a minimum of 18 inches (457 mm) to the centerline of the fixture.*

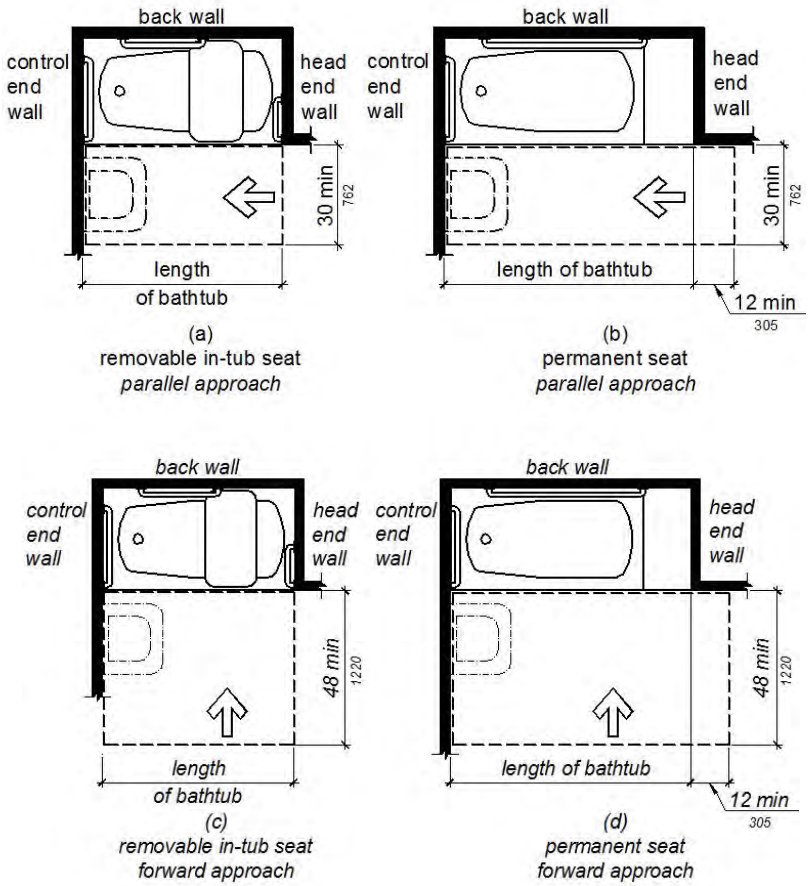
11B-606.7 Sink depth. *Where a forward approach is required at a sink, knee and toe clearance shall be provided in compliance with Section 11B-306.*

SECTION 11B-607—BATHTUBS

***11B*-607.1 General.** Bathtubs shall comply with *Section 11B-*607*.*

***11B*-607.2 Clearance.** Clearance in front of bathtubs shall extend the length of the bathtub and shall be *48 inches (1219 mm) wide minimum for forward approach and* 30 inches (*762* mm) wide minimum *for parallel approach.* A lavatory complying with *Section 11B-*606 shall be permitted at the control end of the clearance. Where a permanent seat is provided at the head end of the bathtub, the clearance shall extend 12 inches (305 mm) minimum beyond the wall at the head end of the bathtub.

FIGURE *11B*-607.2—CLEARANCE FOR BATHTUBS



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***11B*-607.3 Seat.** A permanent seat at the head end of the bathtub or a removable in-tub seat shall be provided. Seats shall comply with *Section 11B*-610.

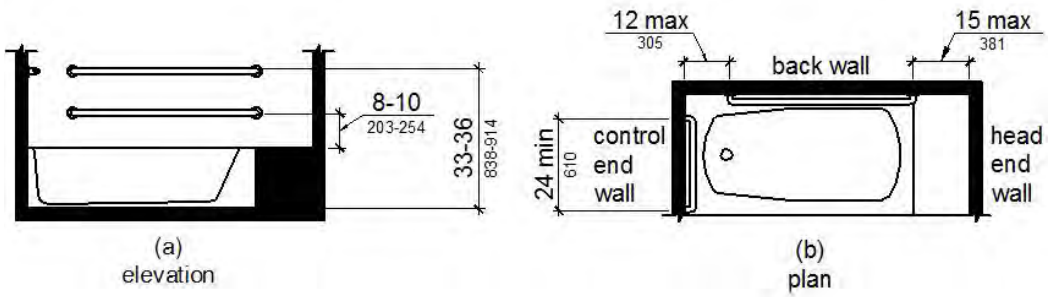
***11B*-607.4 Grab bars.** Grab bars for bathtubs shall comply with *Section 11B*-609 and shall be provided in accordance with *Section 11B*-607.4.1 or *11B*-607.4.2. *Where separate grab bars are required on adjacent walls at a common mounting height, an L-shaped or U-shaped grab bar meeting the dimensional requirements of Section 11B-607.4.1 or 11B-607.4.2 shall be permitted.*

Exceptions:

1. ***Reserved.***
2. In residential dwelling units, grab bars shall not be required to be installed in bathtubs located in bathing facilities provided that reinforcement has been installed in walls and located so as to permit the installation of grab bars complying with *Section 11B*-607.4.

***11B*-607.4.1 Bathtubs with permanent seats.** For bathtubs with permanent seats, grab bars shall be provided in accordance with *Section 11B*-607.4.1.

FIGURE *11B*-607.4.1—GRAB BARS FOR BATHTUBS WITH PERMANENT SEATS

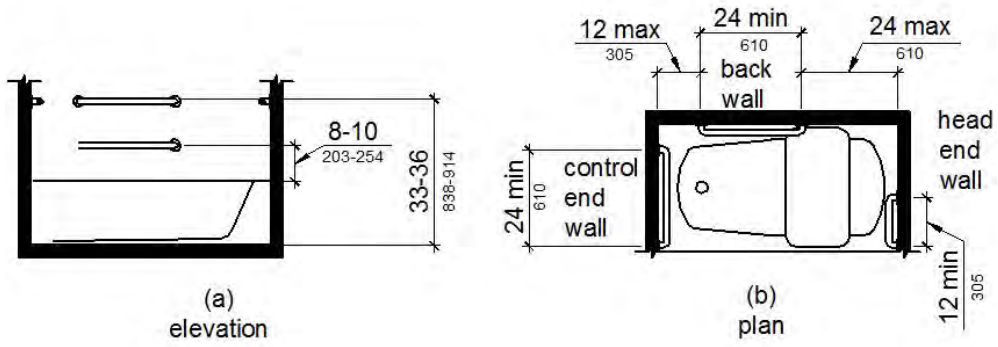


***11B*-607.4.1.1 Back wall.** Two grab bars shall be installed on the back wall, one located in accordance with *Section 11B*-609.4 and the other located 8 inches (*203* mm) minimum and 10 inches (*254* mm) maximum above the rim of the bathtub. Each grab bar shall be installed 15 inches (*381* mm) maximum from the head end wall and 12 inches (305 mm) maximum from the control end wall.

***11B*-607.4.1.2 Control end wall.** A grab bar 24 inches (610 mm) long minimum shall be installed on the control end wall at the front edge of the bathtub.

***11B*-607.4.2 Bathtubs without permanent seats.** For bathtubs without permanent seats, grab bars shall comply with *Section 11B*-607.4.2.

FIGURE *11B*-607.4.2—GRAB BARS FOR BATHTUBS WITH REMOVABLE IN-TUB SEATS



***11B*-607.4.2.1 Back wall.** Two grab bars shall be installed on the back wall, one located in accordance with *Section 11B*-609.4 and the other located 8 inches (*203* mm) minimum and 10 inches (*254* mm) maximum above the rim of the bathtub. Each grab bar shall be 24 inches (610 mm) long minimum and shall be installed 24 inches (610 mm) maximum from the head end wall and 12 inches (305 mm) maximum from the control end wall.

***11B*-607.4.2.2 Control end wall.** A grab bar 24 inches (610 mm) long minimum shall be installed on the control end wall at the front edge of the bathtub.

***11B*-607.4.2.3 Head end wall.** A grab bar 12 inches (305 mm) long minimum shall be installed on the head end wall at the front edge of the bathtub.

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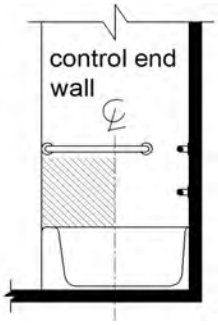
***11B*-607.5 Controls.** Controls, other than drain stoppers, shall be located on an end wall. Controls shall be between the bathtub rim and grab bar, and between the open side of the bathtub and the centerline of the width of the bathtub. Controls shall comply with *Section 11B*-309.4.

FIGURE *11B*-607.5—BATHTUB CONTROL LOCATION



***11B*-607.6 Shower spray unit and water.** A shower spray unit with a hose 59 inches (*1499* mm) long minimum that can be used both as a fixed-position shower head and as a hand-held shower shall be provided. The shower spray unit shall have an on/off control with a non-positive shut-off. If an adjustable-height shower head on a vertical bar is used, the bar shall be installed so as not to obstruct the use of grab bars. Bathtub shower spray units shall deliver water that is 120°F (49°C) maximum.

***11B*-607.7 Bathtub enclosures.** Enclosures for bathtubs shall not obstruct controls, faucets, shower and spray units or obstruct transfer from wheelchairs onto bathtub seats or into bathtubs. Enclosures on bathtubs shall not have tracks installed on the rim of the open face of the bathtub.

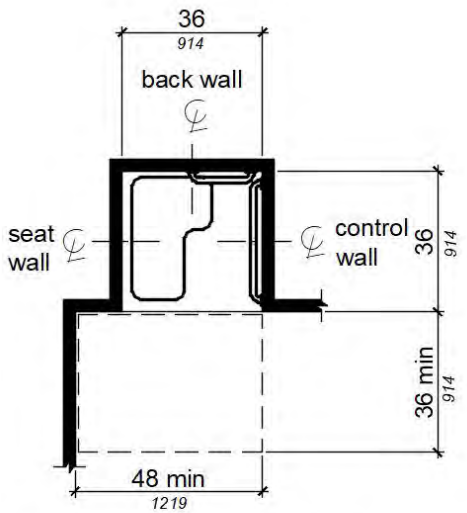
SECTION 11B-608—SHOWER COMPARTMENTS

***11B*-608.1 General.** Shower compartments shall comply with *Section 11B*-608.

***11B*-608.2 Size and clearances for shower compartments.** Shower compartments shall have sizes and clearances complying with *Section 11B*-608.2.

***11B*-608.2.1 Transfer type shower compartments.** Transfer type shower compartments shall be 36 inches (914 mm) by 36 inches (914 mm) clear inside dimensions measured at the center points of opposing sides and shall have a 36-inch (914 mm) wide minimum entry on the face of the shower compartment. Clearance of 36 inches (914 mm) wide minimum by 48 inches (1219 mm) long minimum measured from the control wall shall be provided. *Transfer type shower compartments shall be permitted in transient lodging guest rooms, multibedroom housing units in undergraduate student housing and residential dwelling units; and shall not be permitted at other locations to meet the requirements of Section 11B-213.3.6.*

FIGURE *11B*-608.2.1—TRANSFER TYPE SHOWER COMPARTMENT SIZE AND CLEARANCE



Note: inside finished dimensions measured at the center points of opposing sides

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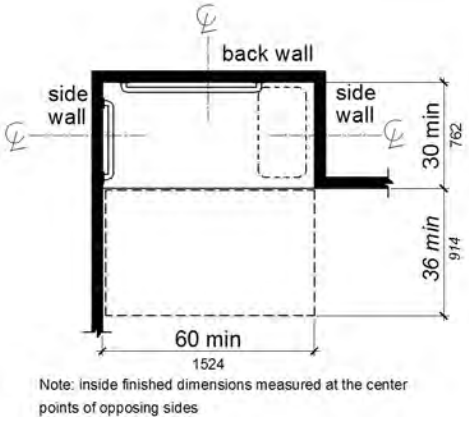
***11B*-608.2.2 Standard roll-in type shower compartments.** Standard roll-in type shower compartments shall be 30 inches (*762* mm) wide minimum by 60 inches (*1524* mm) deep minimum clear inside dimensions measured at center points of opposing sides *with a full opening width on the long side.*

FIGURE *11B*-608.2.2—STANDARD ROLL-IN TYPE SHOWER COMPARTMENT SIZE AND CLEARANCE

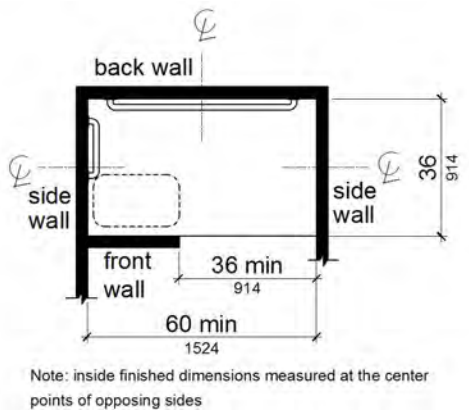


***11B*-608.2.2.1 Clearance.** A *36 inch (914 mm)* wide minimum by 60 inch *(1524 mm)* long minimum clearance shall be provided adjacent to the open face of the shower compartment.

Exception: *Reserved.*

***11B*-608.2.3 Alternate roll-in type shower compartments.** Alternate roll-in type shower compartments shall be 36 inches (*914* mm) wide and 60 inches (*1524* mm) deep minimum clear inside dimensions measured at center points of opposing sides. A 36 inch (*914* mm) wide minimum entry shall be provided at one end of the long side of the compartment.

FIGURE *11B*-608.2.3—ALTERNATE ROLL-IN TYPE SHOWER COMPARTMENT SIZE AND CLEARANCE



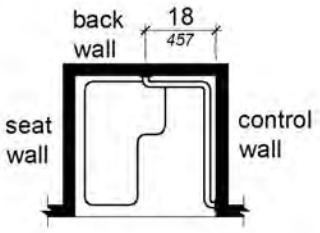
***11B*-608.3 Grab bars.** Grab bars shall comply with *Section 11B*-609 and shall be provided in accordance with *Section 11B*-608.3. Where multiple grab bars are used, required horizontal grab bars shall be installed at the same height above the finish floor. *Where separate grab bars are required on adjacent walls at a common mounting height, an L-shaped or U-shaped grab bar meeting the dimensional requirements of Section 11B-608.3.2 or 11B-608.3.3 shall be permitted.*

Exceptions:

1. ***Reserved.***
2. In residential dwelling units, grab bars shall not be required to be installed in showers located in bathing facilities provided that reinforcement has been installed in walls and located so as to permit the installation of grab bars complying with *Section 11B*-608.3.

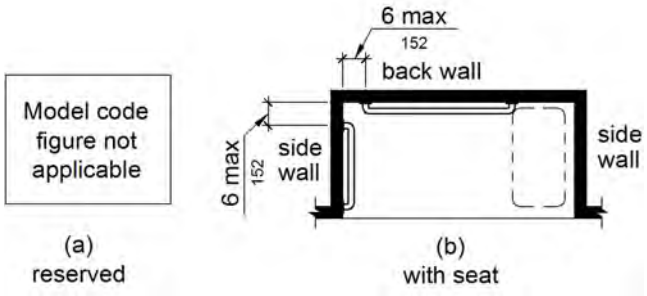
***11B*-608.3.1 Transfer type shower compartments.** In transfer type compartments, grab bars shall be provided across the control wall and back wall to a point 18 inches (*457* mm) from the control wall.

FIGURE 11B-608.3.1—GRAB BARS FOR TRANSFER TYPE SHOWERS



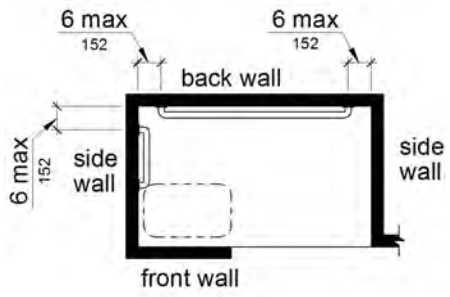
***11B*-608.3.2 Standard roll-in type shower compartments.** *Grab* bars shall be provided on the back wall and the side wall opposite the seat. Grab bars shall not be provided above the seat. Grab bars shall be installed 6 inches (*152* mm) maximum from adjacent walls.

FIGURE *11B*-608.3.2—GRAB BARS FOR STANDARD ROLL-IN TYPE *SHOWER*



***11B*-608.3.3 Alternate roll-in type shower compartments.** In alternate roll-in type shower compartments, grab bars shall be provided on the back wall and the side wall farthest from the compartment entry. Grab bars shall not be provided above the seat. Grab bars shall be installed 6 inches (*152* mm) maximum from adjacent walls.

FIGURE *11B*-608.3.3—GRAB BARS FOR ALTERNATE ROLL-IN TYPE SHOWERS



***11B*-608.4 Seats.** A folding seat shall be provided in roll-in type showers *and transfer type shower compartments.* Seats shall comply with *Section 11B*-610.

Exception: In residential dwelling units, seats shall not be required in shower compartments provided that reinforcement has been installed in walls so as to permit the installation of seats complying with *Section 11B*-608.4.

***11B*-608.5 Controls.** Controls, faucets and shower spray units shall comply with *Section 11B-309.4. Controls and faucets shall allow the user to close and open the water supply.*

***11B*-608.5.1 Transfer type shower compartments.** In transfer type shower compartments, the controls, faucets and shower spray unit shall be installed on the side wall opposite the seat 38 inches (965 mm) minimum and 48 inches (*1219* mm) maximum above the shower floor and shall be located on the control wall 15 inches (380 mm) maximum from the centerline of the seat toward the shower opening.

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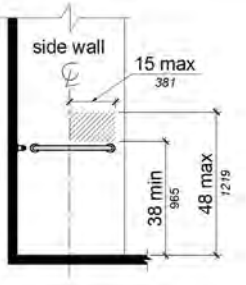
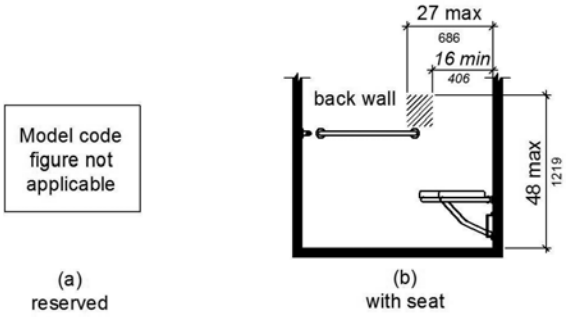
FIGURE *11B*-608.5.1—TRANSFER TYPE SHOWER COMPARTMENT CONTROL LOCATION



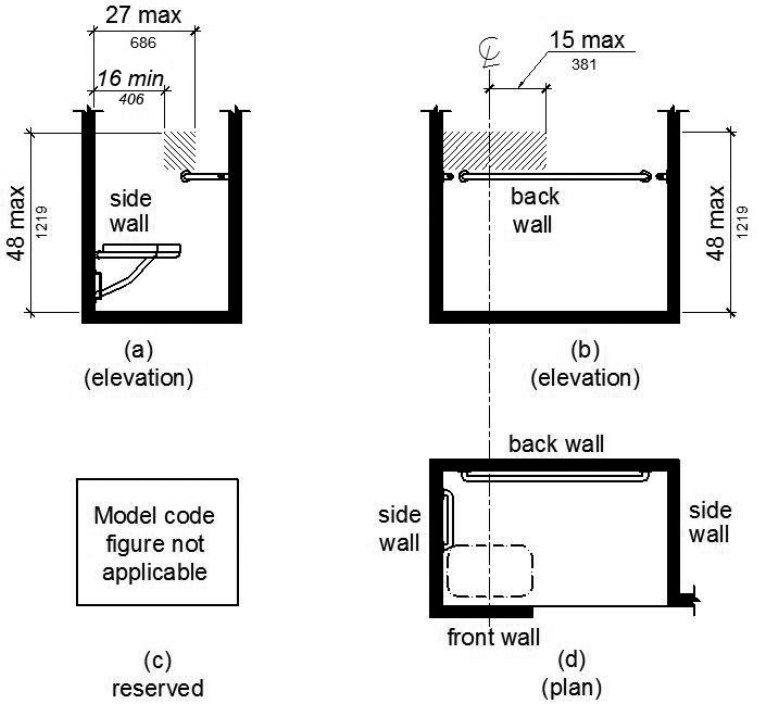
***11B*-608.5.2 Standard roll-in type shower compartments.** *In standard roll-in type shower compartments, the controls, faucets and the shower spray unit shall be located on the back wall of the compartment adjacent to the seat wall 16 inches (406 mm) minimum and 27 inches (686 mm) maximum from the seat wall; and shall be located above the grab bar, but no higher than 48 inches (1219 mm) above the shower floor.*

FIGURE *11B*-608.5.2—STANDARD ROLL-IN TYPE SHOWER COMPARTMENT CONTROL LOCATION



***11B*-608.5.3 Alternate roll-in type shower compartments.** *In alternate roll-in type shower compartments,* the controls, faucets and shower spray unit shall be located *on the side wall of the compartment adjacent to the seat wall 16 inches (406 mm) minimum and 27 inches (686 mm) maximum from the seat wall or shall be located on the back wall opposite the seat 15 inches (381 mm) maximum, left or right of the centerline of the seat. The controls, faucets and shower spray units shall be located above the grab bar, but no higher than 48 inches (1219 mm) above the shower floor.*

FIGURE *11B*-608.5.3—ALTERNATE ROLL-IN TYPE SHOWER COMPARTMENT CONTROL LOCATION



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***11B*-608.6 Shower spray unit and water.** A shower spray unit with a hose 59 inches (*1499* mm) long minimum that can be used both as a fixed-position shower head and as a hand-held shower shall be provided. The shower spray unit shall have an on/off control with a non-positive shut-off. If an adjustable-height shower head on a vertical bar is used, the bar shall be installed so as not to obstruct the use of grab bars. Shower spray units shall deliver water that is 120°F (49°C) maximum.

Exception: *Where subject to excessive vandalism, two fixed shower heads shall be permitted instead of a hand-held spray unit in facilities that are not medical care facilities, long-term care facilities, transient lodging guest rooms or residential dwelling units. Each shower head shall be installed so it can be operated independently of the other and shall have swivel angle adjustments, both vertically and horizontally. One shower head shall be located at a height of 48 inches (1219 mm) maximum above the shower finish floor.*

***11B*-608.7 Thresholds.** Thresholds in roll-in type shower compartments shall be $^1/_2$ inch (*12.7* mm) high maximum in accordance with *Section 11B*-303. In transfer type shower compartments, thresholds $^1/_2$ inch (*12.7* mm) high maximum shall be beveled, rounded or vertical.

Exception: A threshold 2 inches (*51* mm) high maximum shall be permitted in transfer type shower compartments in existing facilities where provision of a $^1/_2$ inch (*12.7* mm) high threshold would disturb the structural reinforcement of the floor slab.

***11B*-608.8 Shower enclosures.** Enclosures for shower compartments shall not obstruct controls, faucets and shower spray units or obstruct transfer from wheelchairs onto shower seats.

11B-608.9 Shower floor or ground surface. *Floor or ground surfaces of showers shall comply with Section 11B-302.1 and shall be sloped 1:48 maximum in any direction. Where drains are provided, grate openings shall be $^1/_4$ inch (6.4 mm) maximum and flush with the floor surface.*

11B-608.10 Soap dish. *Where a soap dish is provided, it shall be located on the control wall at 40 inches (1016 mm) maximum above the shower floor, and within the reach limits from the seat.*

SECTION 11B-609—GRAB BARS

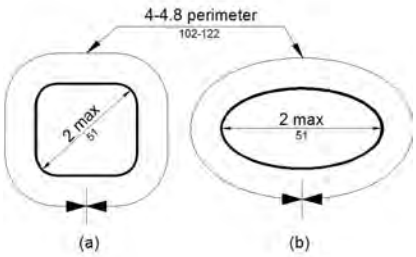
***11B*-609.1 General.** Grab bars in toilet facilities and bathing facilities shall comply with *Section 11B*-609.

***11B*-609.2 Cross section.** Grab bars shall have a cross section complying with *Section 11B*-609.2.1 or *11B*-609.2.2.

***11B*-609.2.1 Circular cross section.** Grab bars with circular cross sections shall have an outside diameter of $1^1/_4$ inches (32 mm) minimum and 2 inches (51 mm) maximum.

***11B*-609.2.2 Non-circular cross section.** Grab bars with non-circular cross sections shall have a cross-section dimension of 2 inches (51 mm) maximum and a perimeter dimension of 4 inches (*102* mm) minimum and 4.8 inches (*122* mm) maximum.

FIGURE *11B*-609.2.2—GRAB BAR NON-CIRCULAR CROSS SECTION

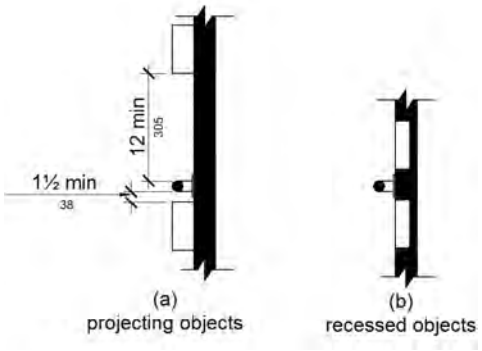


***11B*-609.3 Spacing.** The space between the wall and the grab bar shall be $1^1/_2$ inches (38 mm). The space between the grab bar and projecting objects below and at the ends shall be $1^1/_2$ inches (38 mm) minimum. The space between the grab bar and projecting objects above shall be 12 inches (305 mm) minimum.

Exceptions:

1. The space between the grab bars and shower controls, shower fittings, and other grab bars above shall be permitted to be $1^1/_2$ inches (38 mm) minimum.
2. *For L-shaped or U-shaped grab bars complying with Section 11B-609.9 the space between the walls and the grab bar shall be $1^1/_2$ inches (38 mm) minimum for a distance of 6 inches on either side of the inside corner between two adjacent wall surfaces.*

FIGURE *11B*-609.3—SPACING OF GRAB BARS



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***11B*-609.4 Position of grab bars.** Grab bars shall be installed in a horizontal position, 33 inches (*838* mm) minimum and 36 inches (*914* mm) maximum above the finish floor measured to the top of the gripping surface, except that at water closets for children's use complying with *Section 11B*-604.9, grab bars shall be installed in a horizontal position 18 inches (*457* mm) minimum and 27 inches (*686* mm) maximum above the finish floor measured to the top of the gripping surface. The height of the lower grab bar on the back wall of a bathtub shall comply with *Section 11B*-607.4.1.1 or *11B*-607.4.2.1.

***11B*-609.5 Surface hazards.** Grab bars and any wall or other surfaces adjacent to grab bars shall be free of sharp or abrasive elements and shall have rounded edges.

***11B*-609.6 Fittings.** Grab bars shall not rotate within their fittings.

***11B*-609.7 Installation.** Grab bars shall be installed in any manner that provides a gripping surface at the specified locations and that does not obstruct the required clear floor space.

***11B*-609.8 Structural strength.** Allowable stresses shall not be exceeded for materials used when a vertical or horizontal force of 250 pounds (1112 N) is applied at any point on the grab bar, fastener, mounting device or supporting structure.

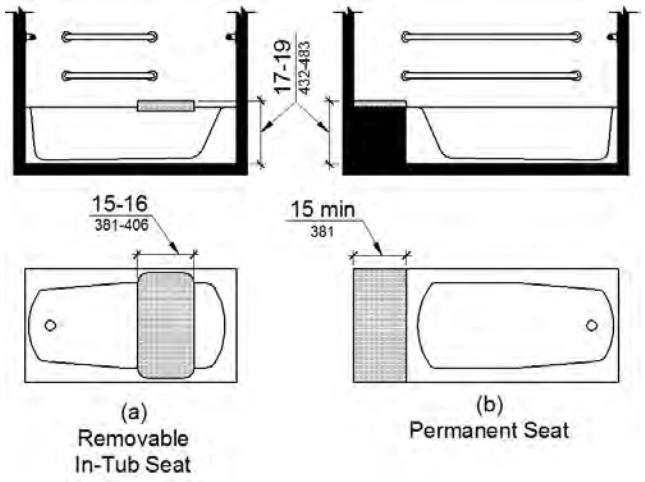
11B-609.9 Alternate configuration. *L-shaped or U-shaped grab bars shall be permitted.*

SECTION 11B-610—SEATS

***11B*-610.1 General.** Seats in bathtubs and shower compartments shall comply with *Section 11B*-610.

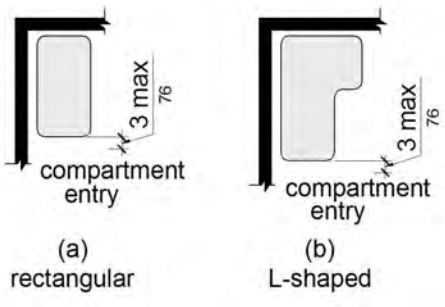
***11B*-610.2 Bathtub seats.** The top of bathtub seats shall be 17 inches (*432* mm) minimum and 19 inches (*483* mm) maximum above the bathroom finish floor. The depth of a removable in-tub seat shall be 15 inches (*381* mm) minimum and 16 inches (*406* mm) maximum. The seat shall be capable of secure placement. Permanent seats at the head end of the bathtub shall be 15 inches (*381* mm) deep minimum and shall extend from the back wall to or beyond the outer edge of the bathtub.

FIGURE *11B*-610.2—BATHTUB SEATS



***11B*-610.3 Shower compartment seats.** *A seat* in a standard roll-in shower compartment shall be a folding type, shall be installed on the side wall adjacent to the controls, and shall extend from the back wall to a point within 3 inches (*76* mm) of the compartment entry. *A seat* in an alternate roll-in type shower compartment shall be a folding type, shall be installed on the front wall opposite the back wall, and shall extend from the adjacent side wall to a point within 3 inches (*76* mm) of the compartment entry. In transfer type showers, the seat shall extend from the back wall to a point within 3 inches (*76* mm) of the compartment entry. The top of the seat shall be 17 inches (*432* mm) minimum and 19 inches (*483* mm) maximum above the bathroom finish floor. *When folded, the seat shall extend 6 inches (152 mm) maximum from the mounting wall.* Seats shall comply with *Section 11B*-610.3.1 or *11B*-610.3.2.

FIGURE *11B*-610.3—EXTENT OF SEAT



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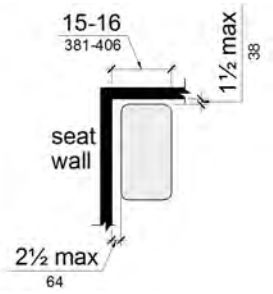
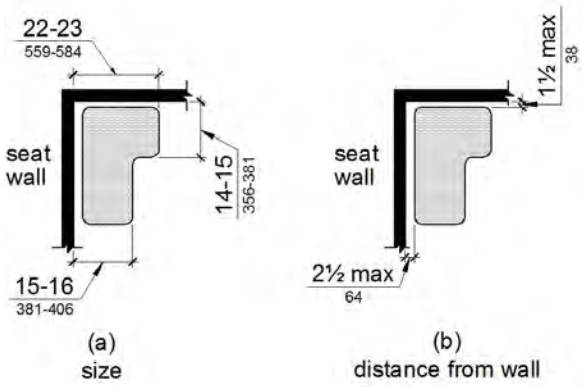
***11B*-610.3.1 Rectangular seats.** The rear edge of a rectangular seat shall be $2^1/_2$ inches (64 mm) maximum and the front edge 15 inches (*381* mm) minimum and 16 inches (*406* mm) maximum from the seat wall. The side edge of the seat shall be $1^1/_2$ inches (38 mm) maximum from the adjacent wall.

FIGURE *11B*-610.3.1—RECTANGULAR SHOWER SEAT



***11B*-610.3.2 L-shaped seats.** The rear edge of an L-shaped seat shall be $2^1/_2$ inches (64 mm) maximum and the front edge 15 inches (*381* mm) minimum and 16 inches (*406* mm) maximum from the seat wall. The rear edge of the "L" portion of the seat shall be $1^1/_2$ inches (38 mm) maximum from the wall and the front edge shall be 14 inches (*356* mm) minimum and 15 inches (*381* mm) maximum from the wall. The end of the "L" shall be 22 inches (*559* mm) minimum and 23 inches (*584* mm) maximum from the main seat wall.

FIGURE *11B*-610.3.2—L-SHAPED SHOWER SEAT



***11B*-610.4 Structural strength.** Allowable stresses shall not be exceeded for materials used when a vertical or horizontal force of 250 pounds (1112 N) is applied at any point on the seat, fastener, mounting device or supporting structure.

SECTION 11B-611—WASHING MACHINES AND CLOTHES DRYERS

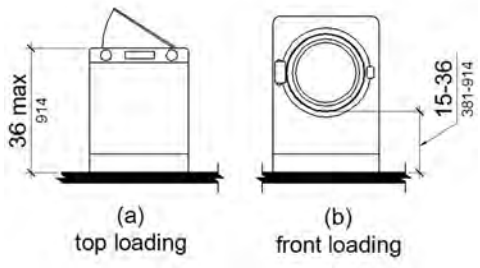
***11B*-611.1 General.** Washing machines and clothes dryers shall comply with *Section 11B*-611.

***11B*-611.2 Clear floor space.** A clear floor or ground space complying with *Section 11B*-305 positioned for parallel approach shall be provided. The clear floor or ground space shall be centered on the appliance.

***11B*-611.3 Operable parts.** Operable parts, including doors, lint screens and detergent and bleach compartments shall comply with *Section 11B*-309.

***11B*-611.4 Height.** Top loading machines shall have the door to the laundry compartment located 36 inches (*914* mm) maximum above the finish floor. Front loading machines shall have the bottom of the opening to the laundry compartment located 15 inches (*381* mm) minimum and 36 inches (*914* mm) maximum above the finish floor.

FIGURE *11B*-611.4—HEIGHT OF LAUNDRY COMPARTMENT OPENING



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SECTION 11B-612—SAUNAS AND STEAM ROOMS

***11B*-612.1 General.** Saunas and steam rooms shall comply with *Section 11B*-612.

***11B*-612.2 Bench.** Where seating is provided in saunas and steam rooms, at least one bench shall comply with *Section 11B*-903. Doors shall not swing into the clear floor space required by *Section 11B*-903.2.

Exception: A readily removable bench shall be permitted to obstruct the turning space required by *Section 11B*-612.3 and the clear floor or ground space required by *Section 11B*-903.2.

***11B*-612.3 Turning space.** A turning space complying with *Section 11B*-304 shall be provided within saunas and steam rooms.

DIVISION 7: COMMUNICATION ELEMENTS AND FEATURES

SECTION 11B-701—GENERAL

***11B*-701.1 Scope.** The provisions of *Division* 7 shall apply where required by *Division* 2 or where referenced by a requirement in this *chapter.*

SECTION 11B-702—FIRE ALARM SYSTEMS

***11B*-702.1 General.** Fire alarm systems shall have permanently installed audible and visible alarms complying with NFPA 72 *and Chapter 9, Sections 907.5.2.1 and 907.5.2.3.*

Exception: ***Reserved.***

SECTION 11B-703—SIGNS

***11B*-703.1 General.** Signs shall comply with *Section 11B*-703. Where both visual and tactile characters are required, either one sign with both visual and tactile characters or two separate signs, one with visual, and one with tactile characters, shall be provided.

11B-703.1.1 Plan review and inspection. *Signs as specified in Section 11B-703, or in other sections of this code, when included in the construction of new buildings or facilities, or when included, altered or replaced due to additions, alterations or renovations to existing buildings or facilities, and when a permit is required, shall comply with Sections 11B-703.1.1.1 and 11B-703.1.1.2.*

11B-703.1.1.1 Plan review. *Plans, specifications or other information indicating compliance with these regulations shall be submitted to the enforcing agency for review and approval.*

11B-703.1.1.2 Inspection. *Signs and identification devices shall be field inspected after installation and approved by the enforcing agency prior to the issuance of a final certificate of occupancy per Chapter 1, Division II, Section 111, or final approval where no certificate of occupancy is issued. The inspection shall include, but not be limited to, verification that Braille dots and cells are properly spaced and the size, proportion and type of raised characters are in compliance with these regulations.*

***11B*-703.2 Raised characters.** Raised characters shall comply with *Section 11B*-703.2 and shall be duplicated in Braille complying with *Section 11B*-703.3. Raised characters shall be installed in accordance with *Section 11B*-703.4.

***11B*-703.2.1 Depth.** Raised characters shall be $^{1}/_{32}$ inch (0.8 mm) minimum above their background.

***11B*-703.2.2 Case.** Characters shall be uppercase.

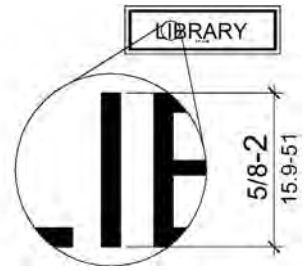
***11B*-703.2.3 Style.** Characters shall be sans serif. Characters shall not be italic, oblique, script, highly decorative or of other unusual forms.

***11B*-703.2.4 Character proportions.** Characters shall be selected from fonts where the width of the uppercase letter "O" is *60* percent minimum and 110 percent maximum of the height of the uppercase letter "I".

***11B*-703.2.5 Character height.** Character height measured vertically from the baseline of the character shall be $^{5}/_{8}$ inch (*15.9* mm) minimum and 2 inches (51 mm) maximum based on the height of the uppercase letter "I".

Exception: ***Reserved.***

FIGURE *11B*-703.2.5—HEIGHT OF RAISED CHARACTERS



***11B*-703.2.6 Stroke thickness.** Stroke thickness of the uppercase letter "I" shall be 15 percent maximum of the height of the character.

***11B*-703.2.7 Character spacing.** Character spacing shall be measured between the two closest points of adjacent raised characters within a message, excluding word spaces. Where characters have rectangular cross sections, spacing between individual raised characters shall be $^{1}/_{8}$ inch (3.2 mm) minimum and 4 times the raised character stroke width maximum. Where characters have other cross sections, spacing between individual raised characters shall be $^{1}/_{16}$ inch (1.6 mm) minimum and 4 times the raised character stroke width maximum at the base of the cross sections, and $^{1}/_{8}$ inch (3.2 mm) minimum and 4 times the raised character stroke width maximum at the top of the cross sections. Characters shall be separated from raised borders and decorative elements $^{3}/_{8}$ inch (9.5 mm) minimum.

***11B*-703.2.8 Line spacing.** Spacing between the baselines of separate lines of raised characters within a message shall be 135 percent minimum and 170 percent maximum of the raised character height.

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***11B*-703.2.9 Format.** *Text shall be in a horizontal format.*

***11B*-703.3 Braille.** Braille shall be contracted (Grade 2) and shall comply with *Sections 11B*-703.3 and *11B*-703.4.

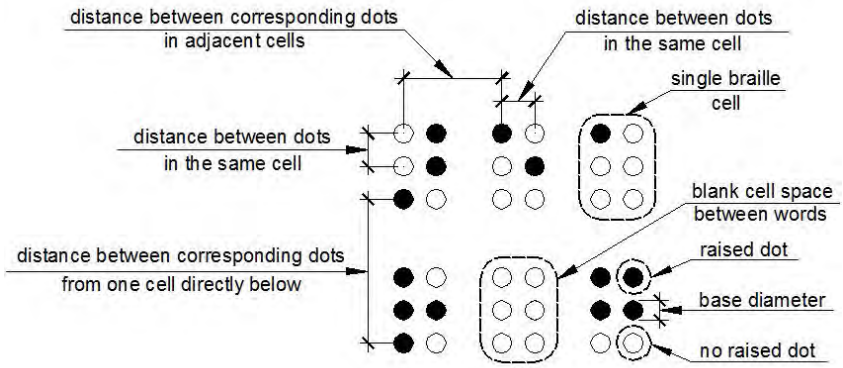
***11B*-703.3.1 Dimensions and capitalization.** Braille dots shall have a domed or rounded shape and shall comply with Table *11B*-703.3.1. The indication of an uppercase letter or letters shall only be used before the first word of sentences, proper nouns and names, individual letters of the alphabet, initials and acronyms.

TABLE *11B*-703.3.1—BRAILLE DIMENSIONS

MEASUREMENT RANGE	MINIMUM IN INCHES MAXIMUM IN INCHES
Dot base diameter	0.059 (1.5 mm) to 0.063 (1.6 mm)
Distance between two dots in the same cell[1]	*0.100 (2.5 mm)*
Distance between corresponding dots in adjacent cells[1]	*0.300 (7.6 mm)*
Dot height	0.025 (0.6 mm) to 0.037 (0.9 mm)
Distance between corresponding dots from one cell directly below[1]	0.395 (10 mm) to 0.400 (10.2 mm)

1. Measured center to center.

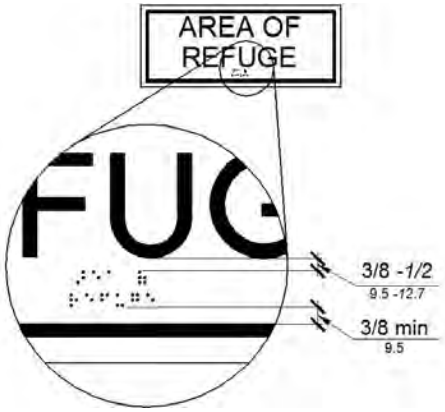
FIGURE *11B*-703.3.1—BRAILLE MEASUREMENT



***11B*-703.3.2 Position.** Braille shall be positioned below the corresponding text *in a horizontal format, flush left or centered.* If text is multilined, Braille shall be placed below the entire text. Braille shall be separated $^{3}/_{8}$ inch (9.5 mm) minimum *and $^{1}/_{2}$ inch (12.7 mm) maximum* from any other tactile characters and $^{3}/_{8}$ inch (9.5 mm) minimum from raised borders and decorative elements.

Exception: Braille provided on elevator car controls shall be separated $^{3}/_{16}$ inch (4.8 mm) minimum and shall be located directly below the corresponding raised characters or symbols.

FIGURE *11B*-703.3.2—POSITION OF BRAILLE

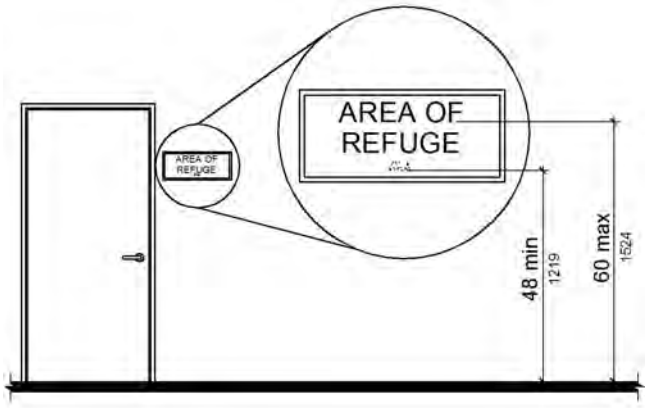


***11B*-703.4 Installation height and location.** Signs with tactile characters shall comply with *Section 11B*-703.4.

***11B*-703.4.1 Height above finish floor or ground.** Tactile characters on signs shall be located 48 inches (*1219* mm) minimum above the finish floor or ground surface, measured from the baseline of the lowest *Braille cells* and 60 inches (*1524* mm) maximum above the finish floor or ground surface, measured from the baseline of the highest *line of raised characters.*

Exception: Tactile characters for elevator car controls shall not be required to comply with *Section 11B*-703.4.1.

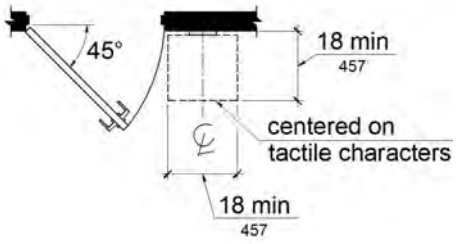
FIGURE 11B-703.4.1—HEIGHT OF TACTILE CHARACTERS ABOVE FINISH FLOOR OR GROUND



***11B*-703.4.2 Location.** Where a tactile sign is provided at a door, the sign shall be located alongside the door at the latch side. Where a tactile sign is provided at double doors with one active leaf, the sign shall be located on the inactive leaf. Where a tactile sign is provided at double doors with two active leafs, the sign shall be located to the right of the right hand door. Where there is no wall space at the latch side of a single door or at the right side of double doors, signs shall be located on the nearest adjacent wall. Signs containing tactile characters shall be located so that a clear floor space of 18 inches (*457* mm) minimum by 18 inches (*457* mm) minimum, centered on the tactile characters, is provided beyond the arc of any door swing between the closed position and 45 degree open position. *Where provided, signs identifying permanent rooms and spaces shall be located at the entrance to, and outside of the room or space. Where provided, signs identifying exits shall be located at the exit door when approached in the direction of egress travel.*

***Exception:** In alterations where sign installation locations identified in Section 11B-703.4.2 are obstructed or otherwise unavailable for sign installation, signs with tactile characters shall be permitted on the push side of doors with closers and without hold-open devices.*

FIGURE 11B-703.4.2—LOCATION OF TACTILE SIGNS AT DOORS



***11B*-703.5 Visual characters.** Visual characters shall comply with *Section 11B*-703.5.

Exception: Where visual characters comply with *Section 11B*-703.2 and are accompanied by Braille complying with *Section 11B*-703.3, they shall not be required to comply with *Sections 11B*-703.5.2 through *11B-703.5.6, 11B-703.5.8 and 11B-703.5.9.*

***11B*-703.5.1 Finish and contrast.** Characters and their background shall have a non-glare finish. Characters shall contrast with their background with either light characters on a dark background or dark characters on a light background.

***11B*-703.5.2 Case.** Characters shall be uppercase or lowercase or a combination of both.

***11B*-703.5.3 Style.** Characters shall be conventional in form. Characters shall not be italic, oblique, script, highly decorative or of other unusual forms.

***11B*-703.5.4 Character proportions.** Characters shall be selected from fonts where the width of the uppercase letter "O" is *60* percent minimum and 110 percent maximum of the height of the uppercase letter "I".

***11B*-703.5.5 Character height.** Minimum character height shall comply with Table *11B-703.5.5.* Viewing distance shall be measured as the horizontal distance between the character and an obstruction preventing further approach towards the sign. Character height shall be based on the uppercase letter "I".

***Exception:** Where provided, floor plans providing emergency procedures information in accordance with Title 19 shall not be required to comply with Section 11B-703.5.5.*

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TABLE *11B*-703.5.5—VISUAL CHARACTER HEIGHT		
HEIGHT TO FINISH FLOOR OR GROUND FROM BASELINE OF CHARACTER	**HORIZONTAL VIEWING DISTANCE**	**MINIMUM CHARACTER HEIGHT**
40 inches (*1016* mm) to less than or equal to 70 inches (*1778* mm)	less than 72 inches (*1829* mm)	$^{5}/_{8}$ inch (*15.9* mm)
	72 inches (*1829* mm) and greater	$^{5}/_{8}$ inch (*15.9* mm), plus $^{1}/_{8}$ inch (3.2 mm) per foot (305 mm) of viewing distance above 72 inches (*1829* mm)
Greater than 70 inches (*1778* mm) to less than or equal to 120 inches (*3048* mm)	less than 180 inches (*4572* mm)	2 inches (51 mm)
	180 inches (*4572* mm) and greater	2 inches (51 mm), plus $^{1}/_{8}$ inch (3.2 mm) per foot (305 mm) of viewing distance above 180 inches (*4572* mm)
greater than 120 inches (*3048* mm)	less than 21 feet (*6401* mm)	3 inches (*76* mm)
	21 feet (*6401* mm) and greater	3 inches (*76* mm), plus $^{1}/_{8}$ inch (3.2 mm) per foot (305 mm) of viewing distance above 21 feet (*6401* mm)

***11B*-703.5.6 Height from finish floor or ground.** Visual characters shall be 40 inches (*1016* mm) minimum above the finish floor or ground.

Exceptions:

1. Visual characters indicating elevator car controls shall not be required to comply with *Section 11B*-703.5.6.
2. *Floor-level exit signs complying with Chapter 10, Section 1013.7 shall not be required to comply with Section 11B-703.5.6.*
3. *Where provided, floor plans providing emergency procedures information in accordance with Title 19 shall not be required to comply with Section 11B-703.5.6.*

***11B*-703.5.7 Stroke thickness.** Stroke thickness of the uppercase letter "I" shall be 10 percent minimum and *20* percent maximum of the height of the character.

***11B*-703.5.8 Character spacing.** Character spacing shall be measured between the two closest points of adjacent characters, excluding word spaces. Spacing between individual characters shall be 10 percent minimum and 35 percent maximum of character height.

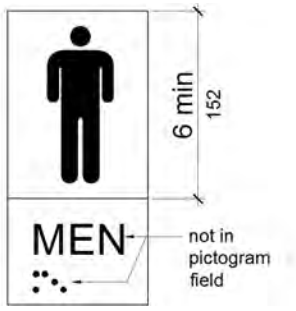
***11B*-703.5.9 Line spacing.** Spacing between the baselines of separate lines of characters within a message shall be 135 percent minimum and 170 percent maximum of the character height.

11B-703.5.10 Format. *Text shall be in a horizontal format.*

***11B*-703.6 Pictograms.** Pictograms shall comply with Section *11B*-703.6.

***11B*-703.6.1 Pictogram field.** Pictograms shall have a field height of 6 inches (*152* mm) minimum. Characters and Braille shall not be located in the pictogram field.

FIGURE *11B*-703.6.1—PICTOGRAM FIELD



***11B*-703.6.2 Finish and contrast.** Pictograms and their field shall have a non-glare finish. Pictograms shall contrast with their field with either a light pictogram on a dark field or a dark pictogram on a light field.

***11B*-703.6.3 Text descriptors.** Pictograms shall have text descriptors located directly below the pictogram field. Text descriptors shall comply with *Sections 11B*-703.2, *11B*-703.3 and *11B*-703.4.

***11B*-703.7 Symbols of accessibility.** Symbols of accessibility shall comply with *Section 11B*-703.7.

***11B*-703.7.1 Finish and contrast.** Symbols of accessibility and their background shall have a non-glare finish. Symbols of accessibility shall contrast with their background with either a light symbol on a dark background or a dark symbol on a light background.

***11B*-703.7.2 Symbols.**

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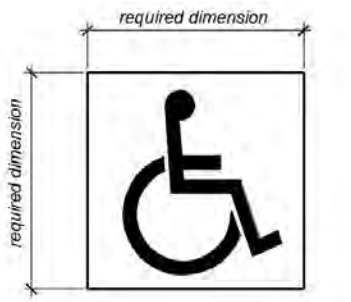
***11B*-703.7.2.1 International Symbol of Accessibility.** The International Symbol of Accessibility shall comply with Figure *11B*-703.7.2.1. *The symbol shall consist of a white figure on a blue background. The color blue shall approximate FS 15090 in Federal Standard 595C. A border may be provided inside or outside of the minimum required International Symbol of Accessibility dimension.*

Exceptions:

1. *The appropriate enforcement agency may approve other colors provided the symbol contrast is light on dark or dark on light.*
2. *On the accessibility function button on hall call consoles in a destination-oriented elevator system the International Symbol of Accessibility shall be a white symbol on a black background.*

FIGURE 11B-703.7.2.1—INTERNATIONAL SYMBOL OF ACCESSIBILITY



***11B*-703.7.2.2 International Symbol of TTY.** The International Symbol of TTY shall comply with Figure *11B*-703.7.2.2.

FIGURE *11B*-703.7.2.2—INTERNATIONAL SYMBOL OF TTY

***11B*-703.7.2.3 Volume control telephones.** Telephones with a volume control shall be identified by a pictogram of a telephone handset with radiating sound waves on a square field such as shown in Figure *11B*-703.7.2.3.

FIGURE *11B*-703.7.2.3—VOLUME CONTROL TELEPHONE

***11B*-703.7.2.4 Assistive listening systems.** Assistive listening systems shall be identified by the International Symbol of Access for Hearing Loss complying with Figure *11B*-703.7.2.4.

FIGURE *11B*-703.7.2.4—INTERNATIONAL SYMBOL OF ACCESS FOR HEARING LOSS

11B-703.7.2.5 Reserved.

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11B-703.7.2.6 Toilet and bathing facilities geometric symbols. *Geometric symbols at entrances to toilet and bathing rooms shall be mounted at 58 inches (1473 mm) minimum and 60 inches (1524 mm) maximum above the finish floor or ground surface measured from the centerline of the symbol. Where a door is provided the symbol shall be mounted within 1 inch (25 mm) of the vertical centerline of the door.*

11B-703.7.2.6.1 Men's toilet and bathing facilities. *A triangle symbol shall be located at entrances to men's toilet and bathing facilities. The triangle symbol shall be an equilateral triangle $^1/_4$ inch (6.4 mm) thick with edges 12 inches (305 mm) long and a vertex pointing upward. The color of the triangle symbol shall contrast with the color of the door or surface on which the triangle symbol is mounted, either light on a dark background or dark on a light background.*

Exception: *Within secure perimeter of detention and correctional facilities, geometric symbols shall not be required to be $^1/_4$ inch (6.4 mm) thick.*

11B-703.7.2.6.2 Women's toilet and bathing facilities. *A circle symbol shall be located at entrances to women's toilet and bathing facilities. The circle symbol shall be $^1/_4$ inch (6.4 mm) thick and 12 inches (305 mm) in diameter. The color of the circle symbol shall contrast with the color of the door or surface on which the circle symbol is mounted, either light on a dark background or dark on a light background.*

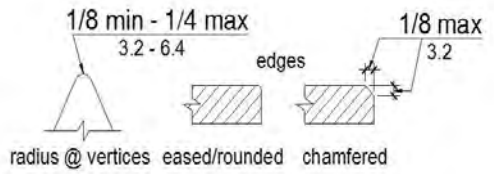
Exception: *Within secure perimeter of detention and correctional facilities, geometric symbols shall not be required to be $^1/_4$ inch (6.4 mm) thick.*

11B-703.7.2.6.3 Unisex toilet and bathing facilities. *A combined circle and triangle symbol shall be located at entrances to unisex toilet and bathing facilities. The combined circle and triangle symbol shall consist of a circle symbol $^1/_4$ inch (6.4 mm) thick and 12 inches (305 mm) in diameter with a $^1/_4$ inch (6.4 mm) thick equilateral triangle symbol superimposed on and geometrically inscribed within the 12-inch (305 mm) diameter of the circle symbol. The vertices of the triangle symbol shall be located $^1/_4$ inch (6.4 mm) maximum from the edge of the circle symbol with a vertex pointing upward. The color of the triangle symbol shall contrast with the color of the circle symbol, either light on a dark background or dark on a light background. The color of the circle symbol shall contrast with the color of the door or surface on which the combined circle and triangle symbol is mounted, either light on a dark background or dark on a light background.*

Exception: *Within secure perimeter of detention and correctional facilities, geometric symbols shall not be required to be $^1/_4$ inch (6.4 mm) thick.*

11B-703.7.2.6.4 Edges and vertices on geometric symbols. *Edges shall be eased or rounded at $^1/_{16}$ inch (1.59 mm) minimum, or chamfered at $^1/_8$ inch (3.2 mm) maximum. Vertices shall be radiused between $^1/_8$ inch (3.2 mm) minimum and $^1/_4$ inch (6.4 mm) maximum.*

FIGURE 11B-703.7.2.6.4—EDGES AND VERTICES ON GEOMETRIC SYMBOLS



11B-703.7.2.7 Pedestrian traffic-control buttons. *Pole-supported pedestrian traffic-control buttons shall be identified with color coding consisting of a textured horizontal yellow band 2 inches (51 mm) in width encircling the pole, and a 1-inch-wide (25 mm) dark border band above and below this yellow band. Color coding shall be placed immediately above the control button. Control buttons shall be located no higher than 48 inches (1219 mm) above the ground surface adjacent to the pole.*

11B-703.8 Variable message signs.

11B-703.8.1 General. *High resolution variable message sign (VMS) characters shall comply with Sections 11B-703.5 and 11B-703.8.12 through 11B-703.8.14. Low resolution variable message sign (VMS) characters shall comply with Section 11B-703.8.*

11B-703.8.2 Case. *Low resolution VMS characters shall be uppercase.*

11B-703.8.3 Style. *Low resolution VMS characters shall be conventional in form, shall be sans serif, and shall not be italic, oblique, script, highly decorative or of other unusual forms.*

11B-703.8.4 Character height. *The uppercase letter "I" shall be used to determine the allowable height of all low resolution VMS characters of a font. Viewing distance shall be measured as the horizontal distance between the character and an obstruction preventing further approach towards the sign. The uppercase letter "I" of the font shall have a minimum height complying with Table 11B-703.8.4.*

Exception: *In assembly seating where the maximum viewing distance is 100 feet (30.5 m) or greater, the height of the uppercase "I" of low resolution VMS fonts shall be permitted to be 1 inch (25 mm) for every 30 feet (9144 mm) of viewing distance, provided the*

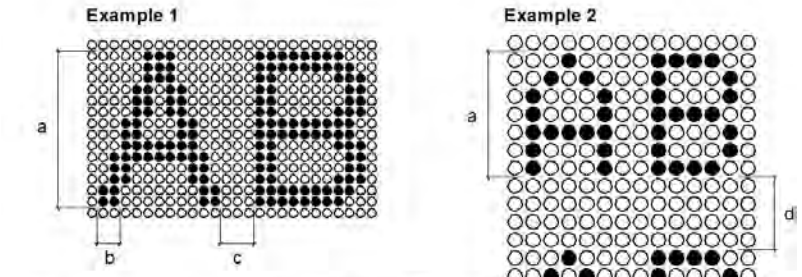
character height is 8 inches (203 mm) minimum. Viewing distance shall be measured as the horizontal distance between the character and where someone is expected to view the sign.

TABLE 11B-703.8.4—LOW RESOLUTION VMS CHARACTER HEIGHT		
HEIGHT ABOVE FLOOR TO BASELINE OF CHARACTER	**HORIZONTAL VIEWING DISTANCE**	**MINIMUM CHARACTER HEIGHT**
40 inches (1016 mm) to less than or equal to 70 inches (1778 mm)	Less than 10 feet (3048 mm)	2 inches (51 mm)
	10 feet (3048 mm) and greater	2 inches (51 mm), plus $^1/_5$ inch (5.1 mm) per foot (305 mm) of viewing distance above 10 feet (3048 mm)
Greater than 70 inches (1778 mm) to less than or equal to 120 inches (3048 mm)	Less than 15 feet (4572 mm)	3 inches (76 mm)
	15 feet (4572 mm) and greater	3 inches (76 mm), plus $^1/_5$ inch (5.1 mm) per foot (305 mm) of viewing distance above 15 feet (4572 mm)
Greater than 120 inches (3048 mm)	Less than 20 feet (6096 mm)	4 inches (102 mm)
	20 feet (6096 mm) and greater	4 inches (102 mm), plus $^1/_5$ inch (5.1 mm) per foot (305 mm) of viewing distance above 20 feet (6096 mm)

11B-703.8.5 Character width. *The uppercase letter "O" shall be used to determine the allowable width of all low resolution VMS characters of a font. Low resolution VMS characters shall comply with the pixel count for character width in Table 11B-703.8.5.*

TABLE 11B-703.8.5—PIXEL COUNT FOR LOW RESOLUTION VMS			
CHARACTER HEIGHT	**CHARACTER WIDTH RANGE**	**STROKE WIDTH RANGE**	**CHARACTER SPACING RANGE**
7	5-6	1	2
8	6-7	1-2	2-3
9	6-8	1-2	2-3
10	7-9	2	2-4
11	8-10	2	2-4
12	8-11	2	3-4
13	9-12	2-3	3-5
14	10-13	2-3	3-5
15	11-14	2-3	3-5

FIGURE 11B-703.8.5—LOW RESOLUTION VMS CHARACTERS



	Property	Example 1	Example 2
a	Character Height	14 Pixels	7 Pixels
b	Stroke Width	2 Pixels	1 Pixels
c	Character Spacing	3 Pixels	2 Pixels
d	Line Spacing		4 Pixels

11B-703.8.6 Stroke width. *The uppercase letter "I" shall be used to determine the allowable stroke width of all low resolution VMS characters of a font. Low resolution VMS characters shall comply with the pixel count for stroke width in Table 11B-703.8.5.*

11B-703.8.7 Character spacing. *Spacing shall be measured between the two closest points of adjacent low resolution VMS characters within a message, excluding word spaces. Low resolution VMS character spacing shall comply with the pixel count for character spacing in Table 11B-703.8.5.*

11B-703.8.8 Line spacing. *Low resolution VMS characters shall comply with Section 11B-703.5.9.*

***11B*-703.8.9 Height above floor.** *Low resolution VMS characters shall be 40 inches (1016 mm) minimum above the floor of the viewing position, measured to the baseline of the character. Heights of low resolution variable message sign characters shall comply with Table 11B-703.8.4, based on the size of the characters on the sign.*

***11B*-703.8.10 Finish.** *The background of low resolution VMS characters shall have a nonglare finish.*

***11B*-703.8.11 Contrast.** *Low resolution VMS characters shall be light characters on a dark background.*

***11B*-703.8.12 Protective covering.** *Where a protective layer is placed over VMS characters through which the VMS characters must be viewed, the protective covering shall have a nonglare finish.*

***11B*-703.8.13 Brightness.** *The brightness of variable message signs in exterior locations shall automatically adjust in response to change in ambient light levels.*

***11B*-703.8.14 Rate of change.** *Where a VMS message can be displayed in its entirety on a single screen, it shall be displayed on a single screen and shall remain motionless on the screen for a minimum 3 seconds or 1 second minimum for every seven characters of the message including spaces, whichever is longer.*

SECTION 11B-704—TELEPHONES

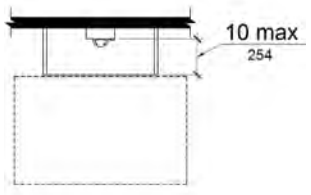
***11B*-704.1 General.** Public telephones shall comply with *Section 11B*-704.

***11B*-704.2 Wheelchair accessible telephones.** Wheelchair accessible telephones shall comply with *Section 11B*-704.2.

***11B*-704.2.1 Clear floor or ground space.** A clear floor or ground space complying with *Section 11B*-305 shall be provided. The clear floor or ground space shall not be obstructed by bases, enclosures or seats.

***11B*-704.2.1.1 Parallel approach.** Where a parallel approach is provided, the distance from the edge of the telephone enclosure to the face of the telephone unit shall be 10 inches (*254* mm) maximum.

FIGURE *11B*-704.2.1.1—PARALLEL APPROACH TO TELEPHONE



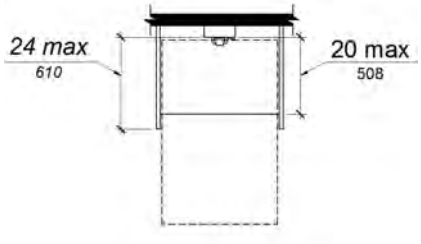
***11B*-704.2.1.2 Forward approach.** *Where a forward approach is provided at a telephone within an enclosure, the counter may extend beyond the face of the telephone 20 inches (508 mm) into the required clear floor or ground space and the enclosure may extend beyond the face of the telephone 24 inches (610 mm). If an additional 6 inches (152 mm) in width of clear floor space is provided, creating a clear floor space of 36 inches by 48 inches (914 mm by 1219 mm), the enclosure may extend more than 24 inches (610 mm) beyond the face of the telephone.*

***11B*-704.2.2 Operable parts.** Operable parts shall comply with *Section 11B*-309. Telephones shall have push-button controls where such service is available.

***11B*-704.2.3 Telephone directories.** Telephone directories, where provided, shall be located in accordance with *Section 11B*-309.

***11B*-704.2.4 Cord length.** The cord from the telephone to the handset shall be 29 inches (*737* mm) long minimum.

FIGURE *11B*-704.2.1.2—FORWARD APPROACH TO TELEPHONE



***11B*-704.3 Volume control telephones.** Public telephones required to have volume controls shall be equipped with a receive volume control that provides a gain adjustable up to 20 dB minimum. For incremental volume control, provide at least one intermediate step of 12 dB of gain minimum. An automatic reset shall be provided. *Volume control telephones shall be equipped with a receiver that generates a magnetic field in the area of the receiver cap. Public telephones with volume control shall be hearing aid compatible.*

***11B*-704.4 TTYs.** TTYs *provided* at a public pay telephone shall be permanently affixed within, or adjacent to, the telephone enclosure. Where an acoustic coupler is used, the telephone cord shall be sufficiently long to allow connection of the TTY and the telephone receiver.

***11B*-704.4.1 Height.** When in use, the touch surface of TTY keypads shall be 34 inches (*864* mm) minimum above the finish floor.

Exception: Where seats are provided, TTYs shall not be required to comply with *Section 11B*-704.4.1.

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***11B*-704.5 TTY shelf.** Public pay telephones required to accommodate portable TTYs shall be equipped with a shelf and an electrical outlet within or adjacent to the telephone enclosure. The telephone handset shall be capable of being placed flush on the surface of the shelf. The shelf shall be capable of accommodating a TTY and shall have 6 inches (*152* mm) minimum vertical clearance above the area where the TTY is to be placed.

SECTION 11B-705—DETECTABLE WARNINGS *AND DETECTABLE DIRECTIONAL TEXTURE*

11B-705.1 Detectable warnings

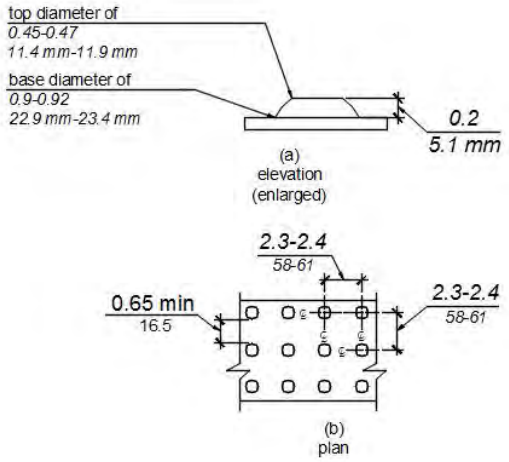
***11B-705.1.1* General.** Detectable warnings shall consist of a surface of truncated domes and shall comply with *Section 11B*-705.

***11B-705.1.1.1* Dome size.** Truncated domes in a detectable warning surface shall have a base diameter of 0.9 inch *(22.9 mm)* minimum and *0.92 inch (23.4 mm)* maximum, a top diameter of *0.45 inch (11.4 mm) minimum and 0.47 inch (11.9 mm) maximum,* and a height of *0.2 inch (5.1 mm).*

***11B-705.1.1.2* Dome spacing.** Truncated domes in a detectable warning surface shall have a center-to-center spacing of *2.3 inches (58 mm)* minimum and 2.4 inches (61 mm) maximum, and a base-to-base spacing of 0.65 inch (*16.5* mm) minimum, measured between the most adjacent domes on a square grid.

Exception: *Where installed in a radial pattern, truncated domes shall have a center-to-center spacing of 1.6 inches (41 mm) minimum to 2.4 inches (61 mm) maximum.*

FIGURE *11B*-705.1—SIZE AND SPACING OF TRUNCATED DOMES



***11B-705.1.1.3 Color and* contrast.** *Detectable warning surfaces shall comply with Section 11B-705.1.1.3.1. The material used to comply with this section shall be an integral part of the detectable warning surface.*

Exceptions:

1. *Replacement of less than 20 percent of existing detectable warnings at a single contiguous location shall be permitted to be in-kind at existing curb ramps, islands or cut-through medians with detectable warnings in compliance with the code requirements in effect at the time of installation.*
2. *Existing installed detectable warnings at curb ramps, islands or cut-through medians may comply with Section 11B-705.1.1.3.2 in lieu of Section 11B-705.1.1.3.1.*

11B-705.1.1.3.1 *Detectable warning surfaces shall be yellow and approximate 33538 of SAE AMS-STD-595A.*

11B-705.1.1.3.2 *Detectable warning surfaces shall provide a 70 percent minimum visual contrast with adjacent walking surfaces. Contrast in percent shall be determined by:*

Contrast percent = [(B1-B2)/B1] × 100 where

B1 = light reflectance value (LRV) of the lighter area and

B2 = light reflectance value (LRV) of the darker area.

Exception: *Where the detectable warning surface does not provide a 70 percent minimum contrast with adjacent walking surfaces, a 1-inch (25 mm) wide minimum visually contrasting surface shall separate the detectable warning from adjacent walking surfaces. The visually contrasting surface shall contrast with both the detectable warning and adjacent walking surfaces, either light-on-dark or dark-on-light.*

11B-705.1.1.4 Resiliency. *Detectable warning surfaces shall differ from adjoining surfaces in resiliency or sound-on-cane contact.*

Exception: *Detectable warning surfaces at curb ramps, islands or cut-through medians shall not be required to comply with Section 11B-705.1.1.4.*

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11B-705.1.2 Locations. *Detectable warnings at the following locations shall comply with Section 11B-705.1.*

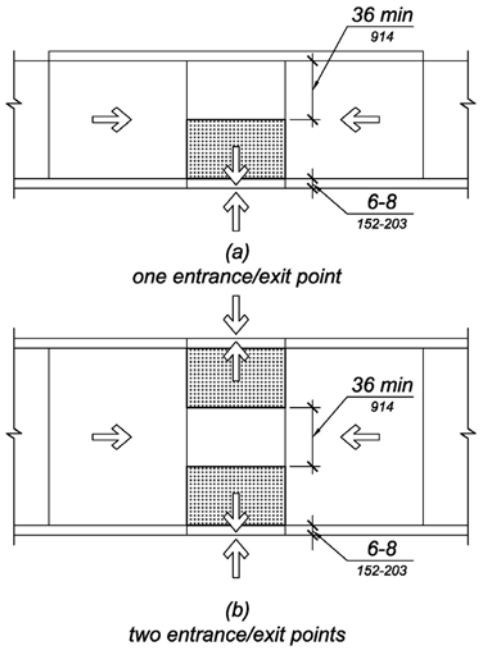
***11B-705.1.2.1* Platform edges.** Detectable warning surfaces at platform boarding edges shall be 24 inches (610 mm) wide and shall extend the full length of the public use areas of the platform.

11B-705.1.2.2 Curb ramps. *Detectable warnings at curb ramps shall comply with Section 11B-705.1.2.2.*

11B-705.1.2.2.1 Perpendicular curb ramps. *Detectable warnings at curb ramps shall extend 36 inches (914 mm) in the direction of travel. Detectable warnings shall extend the full width of the ramp run less 2 inches (51 mm) maximum on each side, excluding any flared sides. Detectable warnings shall be located so the edge nearest the curb is 6 inches (152 mm) minimum and 8 inches (203 mm) maximum from the demarcation line at the face of the curb between the curb and the gutter, street or highway.*

11B-705.1.2.2.2 Parallel curb ramps. *Detectable warnings at parallel curb ramps shall be located so the edge nearest the curb is 6 inches (152 mm) minimum and 8 inches (203 mm) maximum from the demarcation line at the face of the curb between the curb and the gutter, street or highway. Detectable warnings shall extend the full width of the turning space at the demarcation between the street and the sidewalk less 2 inches (51 mm) maximum on each side.*

FIGURE 11B-705.1.2.2.2—PARALLEL CURB RAMPS



11B-705.1.2.2.2.1 One entrance/exit point. *Where the turning space has one entrance/exit point other than the sloped ramp segments, detectable warnings shall be 36 inches (914 mm) deep, as measured perpendicular to the curb, and the turning space shall provide a minimum 36 inches (914 mm) wide portion without detectable warnings to allow pedestrian travel in the direction of the sidewalk without travelling over the detectable warnings.*

Exceptions:

1. *Where it is technically infeasible to provide a minimum 72 inches (1828 mm) wide turning space, as measured perpendicular to the curb, the depth of detectable warnings may be reduced to 24 inches (610 mm) minimum.*
2. *Existing parallel curb ramps with detectable warnings in compliance with the code requirements in effect at the time of installation shall not be required to provide a minimum 36 inches (914 mm) wide portion of the turning space without detectable warnings.*

11B-705.1.2.2.2.2 Two entrance/exit points. *Where the turning space has two entrance/exit points other than the sloped ramp segments, detectable warnings shall be 36 inches (914 mm) deep at both entrance/exit points, as measured perpendicular to the curb, and the turning space shall provide a minimum 36 inches (914 mm) wide portion without detectable warnings to allow pedestrian travel in the direction of the sidewalk without travelling over the detectable warnings.*

Exceptions:

1. *Where it is technically infeasible to provide a minimum 108 inches (2743 mm) wide turning space, as measured perpendicular to the curb, the depth of detectable warnings may be reduced to 24 inches (610 mm) minimum.*
2. *Existing parallel curb ramps with detectable warnings in compliance with the code requirements in effect at the time of installation shall not be required to provide a minimum 36 inches (914 mm) wide portion of the turning space without detectable warnings.*

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11B-705.1.2.3 Islands or cut-through medians. *Detectable warnings at pedestrian islands or cut-through medians shall be 36 inches (914 mm) minimum in depth extending the full width of the pedestrian path or cut-through less 2 inches (51 mm) maximum on each side, placed at the edges of the pedestrian island or cut-through median, and shall be separated by 24 inches (610 mm) minimum of walking surface without detectable warnings.*

Exception: *Detectable warnings shall be 24 inches (610 mm) minimum in depth at pedestrian islands or cut-through medians that are less than 96 inches (2438 mm) in length in the direction of pedestrian travel.*

11B-705.1.2.4 Bus stops. *When detectable warnings are provided at bus stop boarding and alighting areas, the detectable warnings shall extend the full width of the boarding/alighting area and shall be 36 inches (914 mm) minimum in depth.*

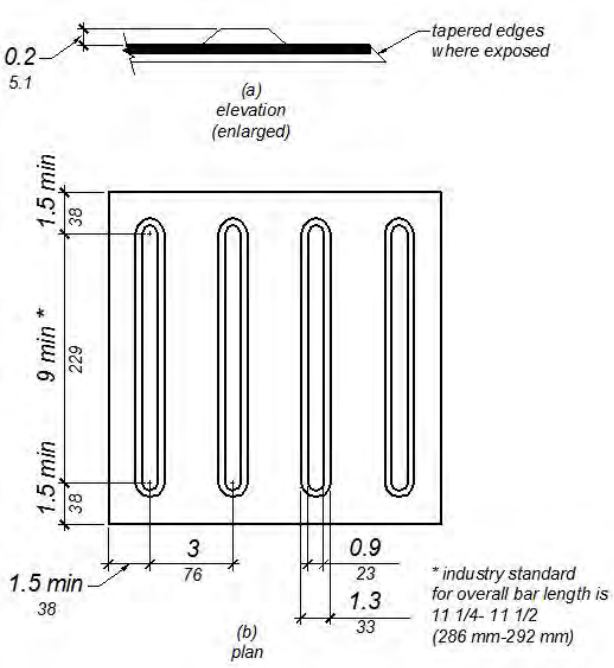
11B-705.1.2.5 Blended transitions. *Detectable warnings at blended transitions shall be 36 inches (914 mm) in depth and extend the entirety of the transition separating the walk or sidewalk from the vehicular way.*

11B-705.1.2.6 Reflecting pools. *When detectable warnings are provided at reflecting pools, it shall be 24 inches (610 mm) minimum and 36 inches (914 mm) maximum in width.*

11B-705.1.2.7 Track crossings. *Detectable warnings at track crossings shall be 36 inches (914 mm) in the direction of pedestrian travel and extend the full width of the circulation path.*

11B-705.2 Detectable directional texture. *Detectable directional texture at transit boarding platforms shall comply with Figure 11B-705.2 and shall be 0.1 inch (2.5 mm) in height that tapers off to 0.04 inch (1.0 mm), with bars raised 0.2 inch (5.1 mm) from the surface. The raised bars shall be 1.3 inches (33 mm) wide and 3 inches (76 mm) from center-to-center of each bar. This surface shall differ from adjoining walking surfaces in resiliency or sound-on-cane contact. The color shall be yellow and approximate FS 33538 of Federal Standard 595C. This surface will be placed directly behind the yellow detectable warning texture specified in Section 11B-705.1.2.1, aligning with all doors of the transit vehicles where passengers will embark. The width of the directional texture shall be equal to the width of the transit vehicle's door opening. The depth of the texture shall not be less than 36 inches (914 mm).*

FIGURE 11B-705.2—DETECTABLE DIRECTIONAL TEXTURE



11B-705.3 Product approval. *Only approved DSA-AC detectable warning products and directional surfaces shall be installed as provided in the California Code of Regulations (CCR), Title 24, Part 1, Chapter 5, Articles 2, 3 and 4. Refer to CCR Title 24, Part 12, Chapter 11B, Section 12-11B.205 for building and facility access specifications for product approval for detectable warning products and directional surfaces.*

SECTION 11B-706—ASSISTIVE LISTENING SYSTEMS

***11B*-706.1 General.** Assistive listening systems required in assembly areas, *conference and meeting rooms* shall comply with *Section 11B-706.*

***11B*-706.2 Receiver jacks.** Receivers required for use with an assistive listening system shall include a $^{1}/_{8}$ inch (3.2 mm) standard mono jack.

***11B*-706.3 Receiver hearing-aid compatibility.** Receivers required to be hearing-aid compatible shall interface with telecoils in hearing aids through the provision of neckloops.

***11B-706.4* Sound pressure level.** Assistive listening systems shall be capable of providing a sound pressure level of 110 dB minimum and 118 dB maximum with a dynamic range on the volume control of 50 dB.

***11B*-706.5 Signal-to-noise ratio.** The signal-to-noise ratio for internally generated noise in assistive listening systems shall be 18 dB minimum.

***11B*-706.6 Peak clipping level.** Peak clipping shall not exceed 18 dB of clipping relative to the peaks of speech.

SECTION 11B-707—AUTOMATIC TELLER MACHINES, FARE MACHINES *AND POINT-OF-SALE DEVICES*

***11B*-707.1 General.** Automatic teller machines, fare machines and point-of-sale devices shall comply with *Section 11B*-707.

***11B*-707.2 Clear floor or ground space.** A clear floor or ground space complying with *Section 11B*-305 shall be provided.

Exception: Clear floor or ground space shall not be required at drive-up only automatic teller machines and fare machines.

***11B*-707.3 Operable parts.** Operable parts shall comply with *Section 11B*-309. Unless a clear or correct key is provided, each operable part shall be able to be differentiated by sound or touch, without activation.

Exceptions:

1. Drive-up only automatic teller machines and fare machines shall not be required to comply with *Sections 11B*-309.2 and *11B*-309.3.
2. *Where automatic teller machines and fare machines do not require compliance with Section 11B-707.2, compliance with Sections 11B-309.2 and 11B-309.3 shall not be required.*
3. *Where point-of-sale devices do not require compliance with Section 11B-707.2, compliance with Sections 11B-309.2 and 11B-309.3 shall not be required.*

***11B*-707.4 Privacy.** Automatic teller machines shall provide the opportunity for the same degree of privacy of input and output available to all individuals.

***11B*-707.5 Speech output.** Machines shall be speech enabled. Operating instructions and orientation, visible transaction prompts, user input verification, error messages, and all displayed information for full use shall be accessible to and independently usable by individuals with vision impairments. Speech shall be delivered through a mechanism that is readily available to all users, including but not limited to, an industry standard connector or a telephone handset. Speech shall be recorded or digitized human, or synthesized.

Exceptions:

1. Audible tones shall be permitted instead of speech for visible output that is not displayed for security purposes, including but not limited to, asterisks representing personal identification numbers.
2. Advertisements and other similar information shall not be required to be audible unless they convey information that can be used in the transaction being conducted.
3. Where speech synthesis cannot be supported, dynamic alphabetic output shall not be required to be audible.

***11B*-707.5.1 User control.** Speech shall be capable of being repeated or interrupted. Volume control shall be provided for the speech function.

Exception: Speech output for any single function shall be permitted to be automatically interrupted when a transaction is selected.

***11B*-707.5.2 Receipts.** Where receipts are provided, speech output devices shall provide audible balance inquiry information, error messages and all other information on the printed receipt necessary to complete or verify the transaction.

Exceptions:

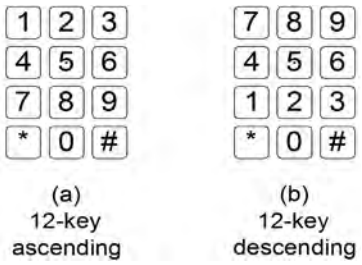
1. Machine location, date and time of transaction, customer account number, and the machine identifier shall not be required to be audible.
2. Information on printed receipts that duplicates information available on-screen shall not be required to be presented in the form of an audible receipt.
3. Printed copies of bank statements and checks shall not be required to be audible.

***11B*-707.6 Input.** Input devices shall comply with *Section 11B*-707.6.

***11B*-707.6.1 Input controls.** At least one tactilely discernible input control shall be provided for each function. Where provided, key surfaces not on active areas of display screens, shall be raised above surrounding surfaces. Where membrane keys are the only method of input, each shall be tactilely discernible from surrounding surfaces and adjacent keys.

***11B*-707.6.2 Numeric keys.** Numeric keys shall be arranged in a 12-key ascending or descending telephone keypad layout. The number five key shall be tactilely distinct from the other keys.

FIGURE *11B*-707.6.2—NUMERIC KEY LAYOUT



***11B*-707.6.3 Function keys.** Function keys shall comply with *Section 11B*-707.6.3.

***11B*-707.6.3.1 Contrast.** Function keys shall contrast visually from background surfaces. Characters and symbols on key surfaces shall contrast visually from key surfaces. Visual contrast shall be either light-on-dark or dark-on-light.

Exception: Tactile symbols required by *Section 11B*-707.6.3.2 shall not be required to comply with *Section 11B*-707.6.3.1.

***11B*-707.6.3.2 Tactile symbols.** Function key surfaces shall have tactile symbols as follows: Enter or Proceed key: raised circle; Clear or Correct key: raised left arrow; Cancel key: raised letter ex; Add Value key: raised plus sign; Decrease Value key: raised minus sign.

***11B*-707.7 Display screen.** The display screen shall comply with *Section 11B*-707.7.

Exception: Drive-up only automatic teller machines and fare machines shall not be required to comply with *Section 11B*-707.7.1.

***11B*-707.7.1 Visibility.** The display screen shall be visible from a point located 40 inches (*1016* mm) above the center of the clear floor space in front of the machine.

11B-707.7.1.1 Vertically mounted display screen. *Where display screens are mounted vertically or tipped away from the viewer less than 30 degrees, the center line of the display screen and other display devices shall be no more than 52 inches (1321 mm) above the floor or ground surface.*

11B-707.7.1.2 Angle-mounted display screen. *Where display screens are mounted tipped away from the viewer 30 degrees to less than 60 degrees from vertical, the center line of the display screen and other display devices shall be no more than 44 inches (1118 mm) above the floor or ground surface.*

11B-707.7.1.3 Horizontally mounted display screen. *Where display screens are mounted tipped away from the viewer 60 degrees to 90 degrees (horizontal) from vertical, the center line of the display screen and other display devices shall be no more than 34 inches (864 mm) above the floor or ground surface.*

***11B*-707.7.2 Characters.** Characters displayed on the screen shall be in a sans serif font. Characters shall be $^{3}/_{16}$ inch (4.8 mm) high minimum based on the uppercase letter "I". Characters shall contrast with their background with either light characters on a dark background or dark characters on a light background.

***11B*-707.8 Braille instructions.** Braille instructions for initiating the speech mode shall be provided. Braille shall comply with *Section 11B*-703.3.

11B-707.9 Point-of-sale devices. *Point-of-sale devices shall comply with Section 11B-707.9.*

11B-707.9.1 General. *Point-of-sale systems that include a video touch screen or any other non-tactile keypad shall be equipped with either of the following:*

11B-707.9.1.1 Tactilely discernible numerical keypad. *A tactilely discernible numerical keypad similar to a telephone keypad containing a raised dot with a dot base diameter between 1.5 mm and 1.6 mm and a height between 0.6 mm and 0.9 mm on the number 5 key that enables a visually impaired person to enter his or her own personal identification number or any other personal information necessary to process the transaction in a manner that provides the opportunity for the same degree of privacy input and output available to all individuals.*

11B-707.9.1.2 Other technology. *Other technology, such as a radio frequency identification device, fingerprint biometrics or some other mechanism that enables a visually impaired person to access the video touch screen device with his or her personal identifier and to process his or her transaction in a manner that provides the opportunity for the same degree of privacy input and output available to all individuals. Where a video screen overlay is provided it shall be equipped with a tactilely discernible numerical keypad complying with Section 11B-707.9.1.1.*

SECTION 11B-708—TWO-WAY COMMUNICATION SYSTEMS

***11B*-708.1 General.** Two-way communication systems shall comply with *Section 11B*-708.

***11B*-708.2 Audible and visual indicators.** The system shall provide both audible and visual signals.

***11B*-708.3 Handsets.** Handset cords, if provided, shall be 29 inches (*737* mm) long minimum.

***11B*-708.4 Residential dwelling unit communication systems.** Communications systems between a residential dwelling unit and a site, building or floor entrance shall comply with *Section 11B*-708.4.

***11B*-708.4.1 Common use or public use system interface.** The common use or public use system interface shall include the capability of supporting voice and TTY communication with the residential dwelling unit interface.

***11B*-708.4.2 Residential dwelling unit interface.** The residential dwelling unit system interface shall include a telephone jack capable of supporting voice and TTY communication with the common use or public use system interface.

DIVISION 8: SPECIAL ROOMS, SPACES AND ELEMENTS

SECTION 11B-801—GENERAL

***11B*-801.1 Scope.** The provisions of *Division* 8 shall apply where required by *Division* 2 or where referenced by a requirement in this *chapter.*

SECTION 11B-802—WHEELCHAIR SPACES, COMPANION SEATS AND DESIGNATED AISLE SEATS AND SEMI-AMBULANT SEATS

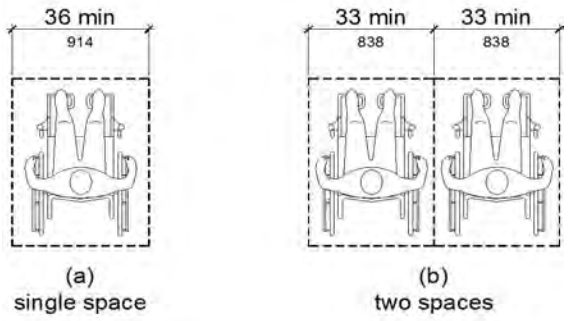
***11B*-802.1 Wheelchair spaces.** Wheelchair spaces shall comply with *Section 11B*-802.1.

***11B*-802.1.1 Floor or ground surface.** The floor or ground surface of wheelchair spaces shall comply with *Section 11B*-302. Changes in level, *slopes exceeding 1:48, and detectable warnings shall not be permitted.*

Exception: *Reserved.*

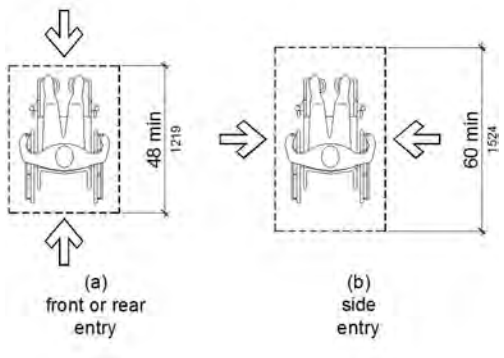
***11B*-802.1.2 Width.** A single wheelchair space shall be 36 inches (*914* mm) wide minimum. Where two adjacent wheelchair spaces are provided, each wheelchair space shall be 33 inches (*838* mm) wide minimum.

FIGURE *11B*-802.1.2—WIDTH OF WHEELCHAIR SPACES



***11B*-802.1.3 Depth.** Where a wheelchair space can be entered from the front or rear, the wheelchair space shall be 48 inches (*1219* mm) deep minimum. Where a wheelchair space can be entered only from the side, the wheelchair space shall be 60 inches (*1524* mm) deep minimum.

FIGURE *11B*-802.1.3—DEPTH OF WHEELCHAIR SPACES



***11B*-802.1.4 Approach.** Wheelchair spaces shall adjoin accessible routes. Accessible routes shall not overlap wheelchair spaces.

***11B*-802.1.5 Overlap.** Wheelchair spaces shall not overlap circulation paths.

***11B*-802.2 Lines of sight.** Lines of sight to the screen, performance area or playing field for spectators in wheelchair spaces shall comply with *Section 11B*-802.2.

***11B*-802.2.1 Lines of sight over seated spectators.** Where spectators are expected to remain seated during events, spectators in wheelchair spaces shall be afforded lines of sight complying with *Section 11B*-802.2.1.

***11B*-802.2.1.1 Lines of sight over heads.** Where spectators are provided lines of sight over the heads of spectators seated in the first row in front of their seats, spectators seated in wheelchair spaces shall be afforded lines of sight over the heads of seated spectators in the first row in front of wheelchair spaces.

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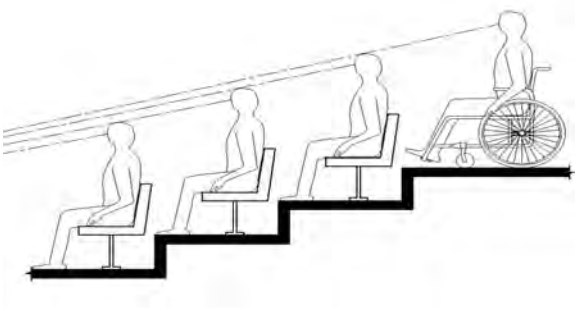
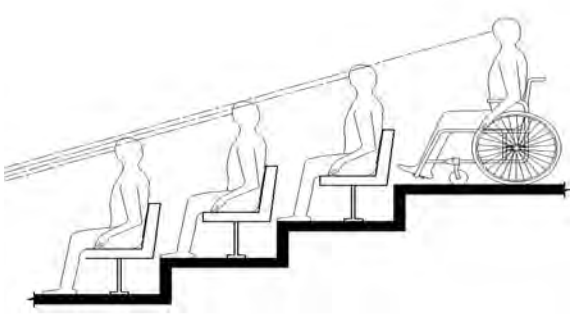
FIGURE 11B-802.2.1.1—LINES OF SIGHT OVER THE HEADS OF SEATED SPECTATORS



***11B*-802.2.1.2 Lines of sight between heads.** Where spectators are provided lines of sight over the shoulders and between the heads of spectators seated in the first row in front of their seats, spectators seated in wheelchair spaces shall be afforded lines of sight over the shoulders and between the heads of seated spectators in the first row in front of wheelchair spaces.

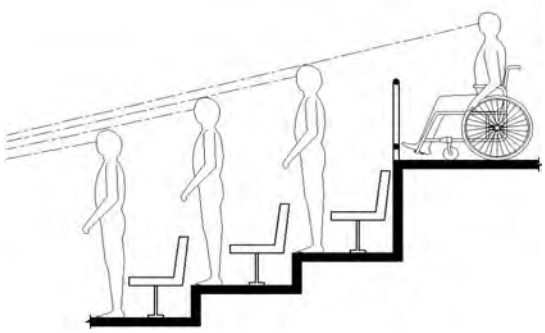
FIGURE *11B*-802.2.1.2—LINES OF SIGHT BETWEEN THE HEADS OF SEATED SPECTATORS



***11B*-802.2.2 Lines of sight over standing spectators.** Where spectators are expected to stand during events, spectators in wheelchair spaces shall be afforded lines of sight complying with *Section 11B*-802.2.2.

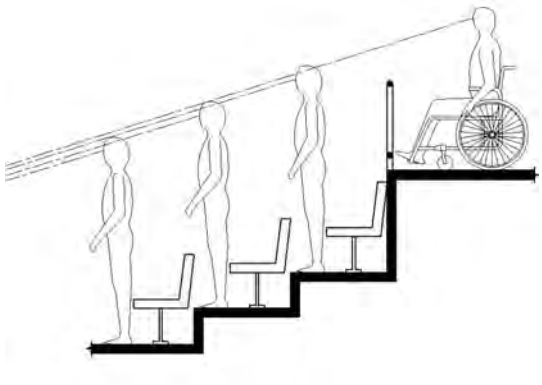
***11B*-802.2.2.1 Lines of sight over heads.** Where standing spectators are provided lines of sight over the heads of spectators standing in the first row in front of their seats, spectators seated in wheelchair spaces shall be afforded lines of sight over the heads of standing spectators in the first row in front of wheelchair spaces.

FIGURE *11B*-802.2.2.1—LINES OF SIGHT OVER THE HEADS OF STANDING SPECTATORS



***11B*-802.2.2.2 Lines of sight between heads.** Where standing spectators are provided lines of sight over the shoulders and between the heads of spectators standing in the first row in front of their seats, spectators seated in wheelchair spaces shall be afforded lines of sight over the shoulders and between the heads of standing spectators in the first row in front of wheelchair spaces.

FIGURE 11B-802.2.2.2—LINES OF SIGHT BETWEEN THE HEADS OF STANDING SPECTATORS



***11B*-802.3 Companion seats.** Companion seats shall comply with *Section 11B*-802.3.

***11B*-802.3.1 Alignment.** In row seating, companion seats shall be located to provide shoulder alignment with adjacent wheelchair spaces. The shoulder alignment point of the wheelchair space shall be measured 36 inches (*914* mm) from the front of the wheelchair space. The floor surface of the companion seat shall be at the same elevation as the floor surface of the wheelchair space.

***11B*-802.3.2 Type.** Companion seats shall be equivalent in size, quality, comfort and amenities to the seating in the immediate area. Companion seats shall be permitted to be movable.

***11B*-802.4 Designated aisle seats.** Designated aisle seats shall comply with *Section 11B*-802.4.

***11B*-802.4.1 Armrests.** Where armrests are provided on the seating in the immediate area, folding or retractable armrests shall be provided on the aisle side of the seat.

***11B*-802.4.2 Identification.** Each designated aisle seat shall be identified by a sign or marker *with the International Symbol of Accessibility complying with Section 11B-703.7.2.1. Signs complying with Section 11B-703.5, notifying patrons of the availability of such seats shall be posted at the ticket office.*

***11B-802.5 Semi-ambulant seats.** Semi-ambulant seats shall provide at least 24 inches (610 mm) clear leg space between the front of the seat to the nearest obstruction or to the back of the seat immediately in front.*

SECTION 11B-803—DRESSING, FITTING AND LOCKER ROOMS

***11B*-803.1 General.** Dressing, fitting and locker rooms shall comply with *Section 11B*-803.

***11B*-803.2 Turning space.** Turning space complying with *Section 11B*-304 shall be provided within the room.

***11B*-803.3 Door swing.** Doors shall not swing into the room unless a *turning* space complying with *Section 11B*-304.3 is provided beyond the arc of the door swing.

***11B*-803.4 Benches.** A bench complying with *Section 11B*-903 shall be provided within the room.

***11B*-803.5 Coat hooks and shelves.** Coat hooks provided within the room shall be located within one of the reach ranges specified in *Section 11B*-308. Shelves shall be 40 inches (*1016* mm) minimum and 48 inches (*1219* mm) maximum above the finish floor or ground. *Coat hooks shall not be located above the bench or other seating in the room.*

***11B-803.6 Mirrors.** Mirrors shall be installed with the bottom edge of the reflecting surface 20 inches (508 mm) maximum above the finish floor or ground. Mirrors shall be full length with a reflective surface 18 inches (457 mm) wide minimum by 54 inches (1372 mm) high minimum and shall be mounted in a position affording a view to a person on the bench as well as to a person in a standing position.*

SECTION 11B-804—KITCHENS, KITCHENETTES *AND WET BARS*

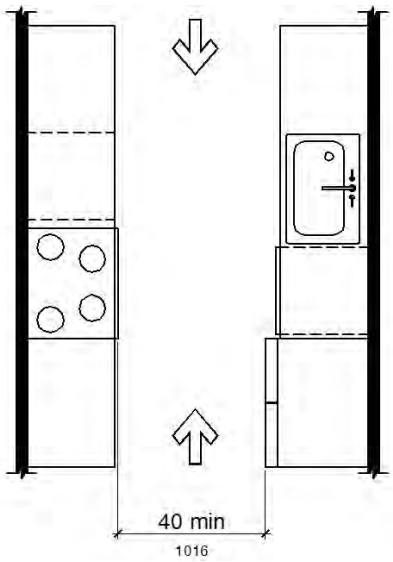
***11B*-804.1 General.** Kitchens, kitchenettes *and wet bars* shall comply with *Section 11B*-804.

***11B*-804.2 Clearance.** Where a pass through kitchen is provided, clearances shall comply with *Section 11B*-804.2.1. Where a U-shaped kitchen is provided, clearances shall comply with *Section 11B*-804.2.2.

Exception: Spaces that do not provide a cooktop or conventional range shall not be required to comply with *Section 11B*-804.2.

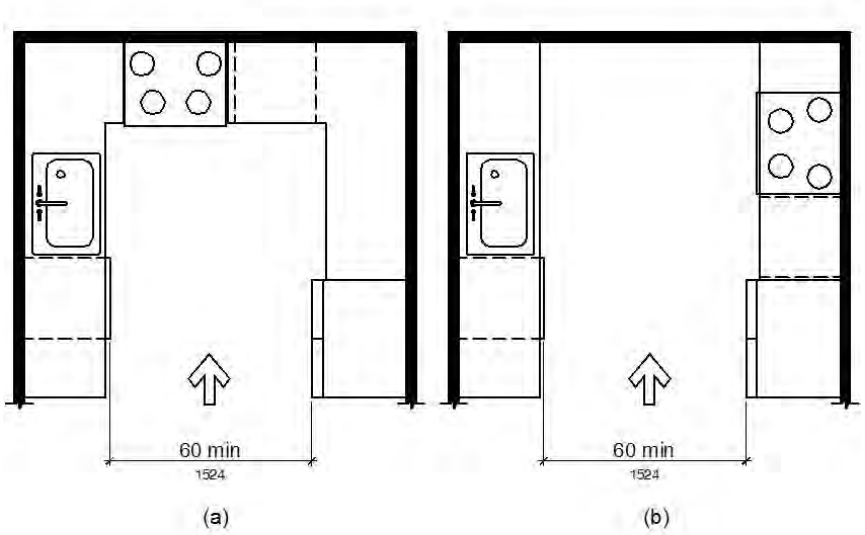
***11B*-804.2.1 Pass through kitchen.** In pass through kitchens where counters, appliances or cabinets are on two opposing sides, or where counters, appliances or cabinets are opposite a parallel wall, clearance between all opposing base cabinets, countertops, appliances or walls within kitchen work areas shall be 40 inches (*1016* mm) minimum. Pass through kitchens shall have two entries.

FIGURE 11B-804.2.1—PASS THROUGH KITCHENS



***11B*-804.2.2 U-shaped.** In U-shaped kitchens enclosed on three contiguous sides, clearance between all opposing base cabinets, countertops, appliances or walls within kitchen work areas shall be 60 inches (*1524* mm) minimum.

FIGURE *11B*-804.2.2—U-SHAPED KITCHENS



11B-804.2.3 Turning space. *In kitchens within multi-bedroom housing units and on floors containing accessible sleeping rooms with adaptable features in undergraduate student housing, turning spaces complying with Section 11B-304 shall be provided.*

***11B*-804.3 Kitchen work surface.** In residential dwelling units required to comply with *Section 11B*-809, at least one 30 inches (*762* mm) wide minimum section of counter shall provide a kitchen work surface that complies with *Section 11B-804.3. In kitchens within multi-bedroom housing units and on floors containing accessible sleeping rooms with adaptable features in undergraduate student housing, at least one 30 inches (762 mm) wide minimum section of counter shall provide a kitchen work surface that complies with Section 11B-804.3.*

***11B*-804.3.1 Clear floor or ground space.** A clear floor space complying with *Section 11B*-305 positioned for a forward approach shall be provided. The clear floor or ground space shall be centered on the kitchen work surface and shall provide knee and toe clearance complying with *Section 11B*-306.

Exception: Cabinetry shall be permitted under the kitchen work surface provided that all of the following conditions are met:

(a) the cabinetry can be removed without removal or replacement of the kitchen work surface;

(b) the finish floor extends under the cabinetry; and

(c) the walls behind and surrounding the cabinetry are finished.

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***11B*-804.3.2 Height.** The kitchen work surface shall be 34 inches (*864* mm) maximum above the finish floor or ground.

Exception: A counter that is adjustable to provide a kitchen work surface at variable heights, 29 inches (*737* mm) minimum and 36 inches (*914* mm) maximum, shall be permitted.

***11B*-804.3.3 Exposed surfaces.** There shall be no sharp or abrasive surfaces under the work surface counters.

***11B*-804.4 Sinks.** Sinks shall comply with *Section 11B*-606.

***11B*-804.5 Storage.** At least 50 percent of shelf space in storage facilities shall comply with *Section 11B*-811.

***11B*-804.6 Appliances.** Where provided, kitchen appliances shall comply with *Section 11B*-804.6.

***11B*-804.6.1 Clear floor or ground space.** A clear floor or ground space complying with *Section 11B*-305 shall be provided at each kitchen appliance. Clear floor or ground spaces shall be permitted to overlap.

***11B*-804.6.2 Operable parts.** All appliance controls shall comply with *Section 11B*-309.

Exceptions:

1. Appliance doors and door latching devices shall not be required to comply with *Section 11B*-309.4.
2. Bottom-hinged appliance doors, when in the open position, shall not be required to comply with *Section 11B*-309.3.

***11B*-804.6.3 Dishwasher.** Clear floor or ground space shall be positioned adjacent to the dishwasher door. The dishwasher door, in the open position, shall not obstruct the clear floor or ground space for the dishwasher or the sink.

***11B*-804.6.4 Range or cooktop.** Where a forward approach is provided, the clear floor or ground space shall provide knee and toe clearance complying with *Section 11B*-306. Where knee and toe space is provided, the underside of the range or cooktop shall be insulated or otherwise configured to prevent burns, abrasions or electrical shock. The location of controls shall not require reaching across burners.

***11B*-804.6.5 Oven.** Ovens shall comply with *Section 11B*-804.6.5.

***11B*-804.6.5.1 Side-hinged door ovens.** Side-hinged door ovens shall have the work surface required by *Section 11B*-804.3 positioned adjacent to the latch side of the oven door.

***11B*-804.6.5.2 Bottom-hinged door ovens.** Bottom-hinged door ovens shall have the work surface required by *Section 11B*-804.3 positioned adjacent to one side of the door.

***11B*-804.6.5.3 Controls.** Ovens shall have controls on front panels.

***11B*-804.6.6 Refrigerator/freezer.** Combination refrigerators and freezers shall have at least 50 percent of the freezer space 54 inches (*1372* mm) maximum above the finish floor or ground. The clear floor or ground space shall be positioned for a parallel approach to the space dedicated to a refrigerator/freezer with the centerline of the clear floor or ground space offset 24 inches (610 mm) maximum from the centerline of the dedicated space.

SECTION 11B-805—MEDICAL CARE AND LONG-TERM CARE FACILITIES

11B-805.1 General. *Medical care facilities and long-term care facilities shall comply with Section 11B-805. All common use spaces and public use spaces in medical care facilities and long-term care facilities shall comply with this chapter.*

11B-805.2 Patient bedrooms and resident sleeping rooms. *Patient bedrooms and resident sleeping rooms required to provide mobility features shall comply with Section 11B-805.2.*

11B-805.2.1 Hand washing fixtures. *Hand washing fixtures shall comply with Section 11B-606.*

11B-805.2.2 Beds. *A 36 inch (914 mm) minimum wide clear space shall be provided along the full length of each side of the beds.*

11B-805.2.3 Turning space. *Turning space complying with Section 11B-304 shall be provided within the room.*

11B-805.2.4 Toilet and bathing rooms. *Toilet and bathing rooms that are provided as part of patient bedrooms and resident sleeping rooms complying with Section 11B-223.2 or 11B-223.3 shall comply with Section 11B-603. Where provided, one water closet, one lavatory and one bathtub or shower shall comply with the applicable requirements of Sections 11B-603 through 11B-610.*

11B-805.3 Waiting rooms. *Waiting rooms shall comply with Section 11B-805.3.*

11B-805.3.1 Wheelchair spaces. *Where seating is provided in waiting rooms, at least 5 percent of the seating shall be wheelchair spaces complying with Section 11B-802.1.*

Exception: *In waiting rooms serving facilities specializing in treating conditions that affect mobility, 10 percent of the seating shall be wheelchair spaces complying with Section 11B-802.1.*

11B-805.4 Examination, diagnostic and treatment rooms. *Examination, diagnostic and treatment rooms shall comply with Section 11B-805.4.*

11B-805.4.1 Beds, exam tables, procedure tables, gurneys and lounge chairs. *A 36-inch (914 mm) minimum wide clear space shall be provided along the full length of each side of beds, exam tables, procedure tables, gurneys and lounge chairs.*

Exception: *General exam rooms in non-emergency settings may provide clear space on only one side of beds, gurneys and exam tables.*

11B-805.4.2 Equipment. *Clear space complying with Section 11B-305.2 shall be provided as required for specific equipment.*

11B-805.4.3 Turning space. *Turning space complying with Section 11B-304 shall be provided within the room.*

11B-805.5 Patient change areas. *Areas where patients change or are prepared for a procedure shall comply with Section 11B-222.*

11B-805.6 Hand washing fixtures, lavatories and sinks. *All hand washing fixtures, lavatories and sinks shall comply with Section 11B-606.*

Exception: *Scrub sinks, as defined in California Plumbing Code Section 221.0, shall not be required to comply with Section 11B-606.*

11B-805.7 Built-in cabinets and work surfaces. *Built-in cabinets, counters and work surfaces shall be accessible, including: patient wardrobes, nurse stations, administrative centers, reception desks, medicine preparation areas, laboratory work stations, equipment consoles, clean and soiled utility cabinets and storage areas; and shall comply with Sections 11B-225 and 11B-902.*

Exceptions:

1. *Built-in wardrobes in patient bedrooms and resident sleeping rooms not required to be accessible are not required to comply with the provisions of this chapter.*
2. *Clinical laboratory work stations provided in a laboratory area that are in addition to the minimum number required to be accessible (5 percent of the work stations provided, but no fewer than one), are not required to comply with the provisions of Section 11B-902.*

SECTION 11B-806—TRANSIENT LODGING GUEST ROOMS

***11B*-806.1 General.** Transient lodging guest rooms shall comply with *Section 11B*-806. Guest rooms required to provide mobility features shall comply with *Section 11B*-806.2. Guest rooms required to provide communication features shall comply with *Section 11B*-806.3.

***11B*-806.2 Guest rooms with mobility features.** Guest rooms required to provide mobility features shall comply with *Section 11B*-806.2.

***11B*-806.2.1 Living and dining areas.** Living and dining areas shall be accessible.

***11B*-806.2.2 Exterior spaces.** Exterior spaces, including patios, terraces and balconies, that serve the guest room shall be accessible.

***11B*-806.2.3 Sleeping areas.** At least one sleeping area shall provide a *36 inch (914 mm) by 48 inch (1219 mm) minimum* clear space on both sides of a bed. The clear space shall be positioned for parallel approach to the side of the bed.

Exception: Where a single clear floor space complying with *Section 11B-305* positioned for parallel approach is provided between two beds, a clear floor or ground space shall not be required on both sides of a bed.

11B-806.2.3.1 Personal lift device floor space. *In transient lodging facilities, clearance for the use of a personal lift device shall be provided under the bed(s) and adjacent to the clear floor space required by Section 11B-806.2.3. The clearance shall be parallel to the long side of the bed and extend under the bed to points horizontally 30 inches (762 mm), vertically 7 inches (178 mm) and not more than 12 inches (305 mm) from the head and foot end of the bed.*

***11B*-806.2.4 Toilet and bathing facilities.** At least one bathroom that is provided as part of a guest room shall comply with *Section 11B-603.* No fewer than one water closet, one lavatory and one bathtub or shower shall comply with applicable requirements of *Sections 11B*-603 through *11B*-610. In addition, required roll-in shower compartments shall comply with *Section 11B*-608.2.2 or *11B*-608.2.3. Toilet and bathing fixtures required to comply with *Sections 11B*-603 through *11B*-610 shall be permitted to be located in more than one toilet or bathing area, provided that travel between fixtures does not require travel between other parts of the guest room.

***11B*-806.2.4.1 Vanity countertop space.** If vanity countertop space is provided in non-accessible guest *bathrooms,* toilet or bathing rooms, comparable vanity countertop space, in terms of size and proximity to the lavatory, shall also be provided in accessible guest *bathrooms* toilet or bathing rooms.

11B*-806.2.5 Kitchens, kitchenettes *and wet bars. Kitchens, kitchenettes *and wet bars* shall comply with *Section 11B*-804*.*

***11B*-806.2.6 Turning space.** Turning space complying with *Section 11B*-304 shall be provided within the guest room.

***11B*-806.3 Guest rooms with communication features.** Guest rooms required to provide communication features shall comply with *Section 11B*-806.3.

***11B*-806.3.1 Alarms.** Where emergency warning systems are provided, *fire* alarms *shall comply* with *Section 11B-702 and carbon monoxide alarms shall comply with Chapter 9, Section 915.*

***11B*-806.3.2 Notification devices.** Visible notification devices shall be provided to alert room occupants of incoming telephone calls and a door knock or bell. Notification devices shall not be connected to visible alarm signal appliances. Telephones shall have volume controls compatible with the telephone system and shall comply with *Section 11B*-704.3. Telephones shall be served by an electrical outlet complying with *Section 11B*-309 located within 48 inches (*1219* mm) of the telephone to facilitate the use of a TTY.

SECTION 11B-807—HOLDING CELLS AND HOUSING CELLS

***11B*-807.1 General.** Holding cells and housing cells shall comply with *Section 11B*-807*.*

***11B*-807.2 Cells with mobility features.** Cells required to provide mobility features shall comply with *Section 11B*-807.2.

***11B*-807.2.1 Turning space.** Turning space complying with *Section 11B*-304 shall be provided within the cell.

***11B*-807.2.2 Benches.** Where benches are provided, at least one bench shall comply with *Section 11B*-903*.*

***11B*-807.2.3 Beds.** Where beds are provided, clear floor space complying with *Section 11B*-305 shall be provided on at least one side of the bed. The clear floor space shall be positioned for parallel approach to the side of the bed.

***11B*-807.2.4 Toilet and bathing facilities.** Toilet facilities or bathing facilities that are provided as part of a cell shall comply with *Section 11B*-603. Where provided, no fewer than one water closet, one lavatory and one bathtub or shower shall comply with the applicable requirements of *Sections 11B*-603 through *11B*-610.

***11B*-807.3 Cells with communication features.** Cells required to provide communication features shall comply with *Section 11B*-807.3.

***11B*-807.3.1 Alarms.** Where audible emergency alarm systems are provided to serve the occupants of cells, visible alarms complying with *Section 11B*-702 shall be provided.

Exception: Visible alarms shall not be required where inmates or detainees are not allowed independent means of egress.

***11B*-807.3.2 Telephones.** Telephones, where provided within cells, shall have volume controls complying with *Section 11B*-704.3.

SECTION 11B-808—COURTROOMS

***11B*-808.1 General.** Courtrooms shall comply with *Section 11B*-808.

***11B*-808.2 Turning space.** Where provided, areas that are raised or depressed and accessed by ramps or platform lifts with entry ramps shall provide unobstructed turning space complying with *Section 11B*-304.

***11B*-808.3 Clear floor space.** Each jury box and witness stand shall have, within its defined area, clear floor space complying with *Section 11B*-305.

Exception: In alterations, wheelchair spaces are not required to be located within the defined area of raised jury boxes or witness stands and shall be permitted to be located outside these spaces where ramp or platform lift access poses a hazard by restricting or projecting into a means of egress required by the appropriate administrative authority.

***11B*-808.4 Judges' benches and courtroom stations.** Judges' benches, clerks' stations, bailiffs' stations, deputy clerks' stations, court reporters' stations and litigants' and counsel stations shall comply with *Section 11B*-902.

SECTION 11B-809—RESIDENTIAL DWELLING UNITS

***11B*-809.1 General.** *When located within public housing facilities, residential* dwelling units shall comply with *Section 11B*-809. Residential dwelling units required to provide mobility features shall comply with *Sections 11B-809.1.1 through 11B-809.1.3, and Sections 11B*-809.2 through *11B*-809.4. Residential dwelling units required to provide communication features shall comply with *Section 11B-809.5. Residential dwelling units with adaptable features shall comply with Section 11B-809.6.*

***11B-809.1.1 Door signal devices.** In buildings with three or more residential dwelling units, the primary entry door to the dwelling unit shall be provided with a door buzzer, bell, chime or equivalent. The activating mechanism shall comply with Section 11B-309 and shall be connected to permanent wiring.*

***11B-809.1.2 Viewing devices.** Where primary entry doors to residential dwelling units are provided with a viewing device for a standing person, the primary entry door to a residential dwelling unit with mobility features shall also provide a lower viewing device 42 inches (1067 mm) minimum and 43 inches (1092 mm) maximum above the finish floor or ground, measured to the top of the device. The viewing device shall allow for a minimum 180 degree range of view.*

***11B-809.1.3 Washing machines and clothes dryers.** Where washing machines and clothes dryers are provided in residential dwelling units with mobility features, they shall comply with Section 11B-611. Washing machines and clothes dryers shall be front loading and shall be the same or equivalent type as provided in comparable dwelling units not required to provide mobility features.*

***11B*-809.2 Accessible routes.** Accessible routes complying with *Division* 4 shall be provided within residential dwelling units in accordance with *Section 11B-809.2.*

Exception: Accessible routes shall not be required to or within unfinished attics or unfinished basements.

***11B*-809.2.1 Location.** At least one accessible route shall connect all spaces and elements which are a part of the residential dwelling unit. Where only one accessible route is provided, it shall not pass through bathrooms, closets or similar spaces.

***11B*-809.2.2 Turning space.** All rooms served by an accessible route shall provide a turning space complying with *Section 11B*-304.

Exception: Turning space shall not be required in exterior spaces 30 inches (*762* mm) maximum in depth or width.

***11B*-809.3 Kitchen.** Where a kitchen is provided, it shall comply with *Section 11B*-804.

***11B*-809.4 Toilet facilities and bathing facilities.** At least one bathroom shall comply with *Section 11B*-603. No fewer than one of each type of fixture provided *within the bathroom* shall comply with applicable requirements of *Sections 11B*-603 through *11B*-610. Toilet and bathing fixtures required to comply with *Sections 11B*-603 through *11B*-610 shall be located in the same *bathroom or* toilet and bathing area, such that travel between fixtures does not require travel between other parts of the residential dwelling unit.

***11B-809.4.1 Subsequent bathrooms.** In residential dwelling units with more than one bathroom, when a bathtub is installed in the first bathroom in compliance with Section 11B-809.4 and a shower compartment is provided in a subsequent bathroom, at least one shower compartment shall comply with Section 11B-608.*

***11B*-809.5 Residential dwelling units with communication features.** Residential dwelling units required to provide communication features shall comply with *Section 11B*-809.5.

***11B*-809.5.1 Building fire alarm system.** Where a building fire alarm system is provided, the system wiring shall be extended to a point within the residential dwelling unit in the vicinity of the residential dwelling unit smoke detection system.

***11B*-809.5.1.1 Alarm appliances.** Where alarm appliances are provided within a residential dwelling unit as part of the building fire alarm system, they shall comply with *Chapter 9, Section 907.5.2.3.3.*

***11B*-809.5.1.2 Activation.** All visible alarm appliances provided within the residential dwelling unit for building fire alarm notification shall be activated upon activation of the building fire alarm in the portion of the building containing the residential dwelling unit.

11B*-809.5.2 Residential dwelling unit smoke detection system *and carbon monoxide detection system. Residential dwelling unit smoke detection systems shall comply with Chapter 9, Section 907.2.11. *Residential dwelling unit carbon monoxide detection systems shall comply with Chapter 4.*

***11B*-809.5.2.1 Activation.** All visible alarm appliances provided within the residential dwelling unit for smoke detection notification shall be activated upon smoke detection. *All visible alarm appliances provided within the residential dwelling unit for carbon monoxide detection notification shall be activated upon carbon monoxide detection.*

***11B*-809.5.3 Interconnection.** The same visible alarm appliances shall be permitted to provide notification of residential dwelling unit smoke detection, building fire alarm activation and *carbon monoxide detection.*

***11B*-809.5.4 Prohibited use.** Visible alarm appliances used to indicate residential dwelling unit smoke detection, *carbon monoxide detection* or building fire alarm activation shall not be used for any other purpose within the residential dwelling unit.

***11B*-809.5.5 Residential dwelling unit primary entrance.** Communication features shall be provided at the residential dwelling unit primary entrance complying with *Section 11B*-809.5.5.

***11B*-809.5.5.1 Notification.** A hard-wired electric doorbell shall be provided. A button or switch shall be provided outside the residential dwelling unit primary entrance. Activation of the button or switch shall initiate an audible tone and visible signal within the residential dwelling unit. Where visible doorbell signals are located in sleeping areas, they shall have controls to deactivate the signal.

***11B*-809.5.5.2 Identification.** A means for visually identifying a visitor without opening the residential dwelling unit entry door shall be provided and shall allow for a minimum 180 degree range of view.

***11B*-809.5.6 Site, building or floor entrance.** Where a system, including a closed-circuit system, permitting voice communication between a visitor and the occupant of the residential dwelling unit is provided, the system shall comply with *Section 11B*-708.4.

11B-809.6 Residential dwelling units with adaptable features. *Residential dwelling units with adaptable features shall comply with Sections 11B-809.7 through 11B-809.12.*

11B-809.7 Accessible routes. *An accessible route shall be provided complying with Section 11B-809.7. The accessible route shall pass through the primary entry door, through all rooms within the dwelling unit and exterior decks and balconies. The accessible route shall adjoin or overlap clear floor spaces and connect all exterior doors.*

Exceptions:

1. *An accessible route shall not be required from the interior of the unit into a basement.*
2. *An accessible route to a garage shall comply with Section 11B-208.3.3.*
3. *An accessible route shall not be required to rooms or spaces not located on the primary entry level of a multistory dwelling unit.*

11B-809.7.1 Width. *The clear width for the accessible route shall be 36 inches (914 mm) minimum.*

Exception: *The clear width shall be permitted to be reduced to 32 inches (813 mm) minimum at doors.*

11B-809.7.2 Changes in level. *Changes in level shall comply with Sections 11B-303.2 and 11B-303.3. Ramps complying with Section 11B-405, elevators complying with Section 11B-407 or platform lifts complying with Section 11B-410 shall be provided where changes in level exceed $^{1}/_{2}$ inch (12.7 mm) high.*

11B-809.8 Doors. *Primary entry doors, required exit doors, secondary exterior doors and interior doors shall comply with Section 11B-809.8. Doors to small mechanical closets specifically dedicated to furnaces or hot water heaters shall not be required to comply with this section.*

1. *The clear width of doors shall comply with Section 11B-404.2.3.*
2. *Door hardware shall comply with Section 11B-404.2.7.*
3. *Door surfaces shall comply with Section 11B-404.2.10.*
4. *Doors in series shall comply with Section 11B-404.2.6.*

11B-809.8.1 Door thresholds. *Primary entry doors, required exit doors, and interior doors intended for user passage shall have thresholds complying with Section 11B-404.2.5. Secondary exterior door thresholds, including sliding door tracks, shall be $^{3}/_{4}$ inch (19.1 mm) high maximum with a 1:2 maximum slope.*

11B-809.8.2 Door opening force. *Doors shall comply with Section 11B-404.2.9.*

Exception: *The opening force for primary entry exterior doors and secondary exterior doors shall be 8.5 pounds (38 N) maximum.*

11B-809.8.3 Door maneuvering clearance. *Minimum maneuvering clearances at doors shall comply with Section 11B-809.8.3. Maneuvering clearances shall extend the full width of the doorway and the required latch side or hinge side clearance.*

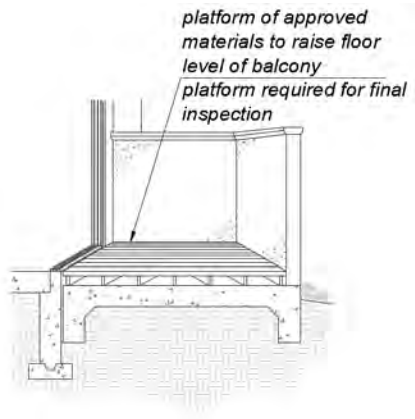
1. *At the dwelling unit side of the primary entry doors, secondary exterior doors, and required exit doors maneuvering clearances shall be 44 inches (1118 mm) minimum in length measured perpendicular to the face of the door in the closed position. The width of the maneuvering clearance shall extend 18 inches (457 mm) beyond the strike edge at the pull side of the door.*
2. *At interior doors maneuvering clearances shall be 42 inches (1067 mm) minimum in length on both sides of the door measured perpendicular to the face of the door in the closed position. A 39-inch (991 mm) minimum length is allowed at interior doors when a clear opening width of 34 inches (864 mm) minimum is provided. The width of the maneuvering clearance shall extend 18 inches (457 mm) beyond the strike edge at the pull side of the door.*

11B-809.8.3.1 Floor or ground surface. *Floor or ground surface within required maneuvering clearances shall not have slopes exceeding 1:48.*

Exceptions: *The floor or landing at primary entry doors, required exit doors and secondary exit doors where a change in elevation occurs between the interior and the exterior surface of the floor or landing, shall comply with the following:*

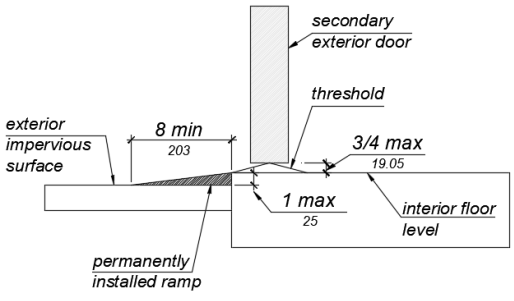
1. *Exterior landings of impervious construction (e.g., concrete, brick, flagstone) serving primary entry doors and required exit doors are limited to not more than $^1/_2$ inch (12.7 mm) of change in height between floor surfaces. Changes in level shall comply with Section 11B-809.7.2.*
2. *Exterior landings of pervious construction (e.g., wood decking with spaces) shall be the same level as the interior landing, except that secondary exterior doors may have no more than $^1/_2$ inch (12.7 mm) of change in height between floor surfaces. Changes in level shall comply with Section 11B-809.7.2.*
3. *Secondary exterior doors onto decks, patios or balcony surfaces constructed of impervious materials (e.g., concrete, brick, flagstone) may have a maximum change in height from the interior landing of 4 inches (102 mm). Changes in height greater than $^1/_2$ inch (12.7 mm) shall be accomplished by means of a ramp complying with Section 11B-405 or by means of a platform constructed to the level of the floor as illustrated in Figure 11B-809.8.3.1(3).*

FIGURE 11B-809.8.3.1(3)—PLATFORM AT SECONDARY EXTERIOR DOOR



4. *Secondary exterior doors onto decks, patios or balcony surfaces constructed of impervious materials (e.g., concrete, brick, flagstone) may have a maximum change in height from the interior landing of 1 inch (25 mm), provided a ramp with a maximum slope of 1:8 is permanently installed as illustrated in Figure 11B-809.8.3.1(4).*

FIGURE 11B-809.8.3.1(4)—RAMP AT SECONDARY EXTERIOR DOOR



ramp at secondary exterior door

11B-809.8.4 Door signal devices. *Every primary entrance to a residential dwelling unit with adaptable features shall be provided with a door buzzer, bell, chime or equivalent. The activating mechanism shall be mounted 48 inches (1219 mm) maximum above the floor and connected to permanent wiring.*

11B-809.9 Kitchens. *Kitchens shall be on an accessible route and shall comply with this section.*

11B-809.9.1 Clear floor space. *Clear floor spaces 30 inches (762 mm) by 48 inches (1219 mm), with centerlines aligned with the centerline of the work surface, appliance, sink or fixture, shall be provided in the following locations:*

1. *For a parallel approach at the range.*
2. *For parallel or forward approach at a cooktop.*
3. *For a parallel or forward approach to the sink and to the work surface required by Sections 11B-809.9.3 and 11B-809.9.4.*
4. *For a parallel or forward approach to all other fixtures or appliances.*

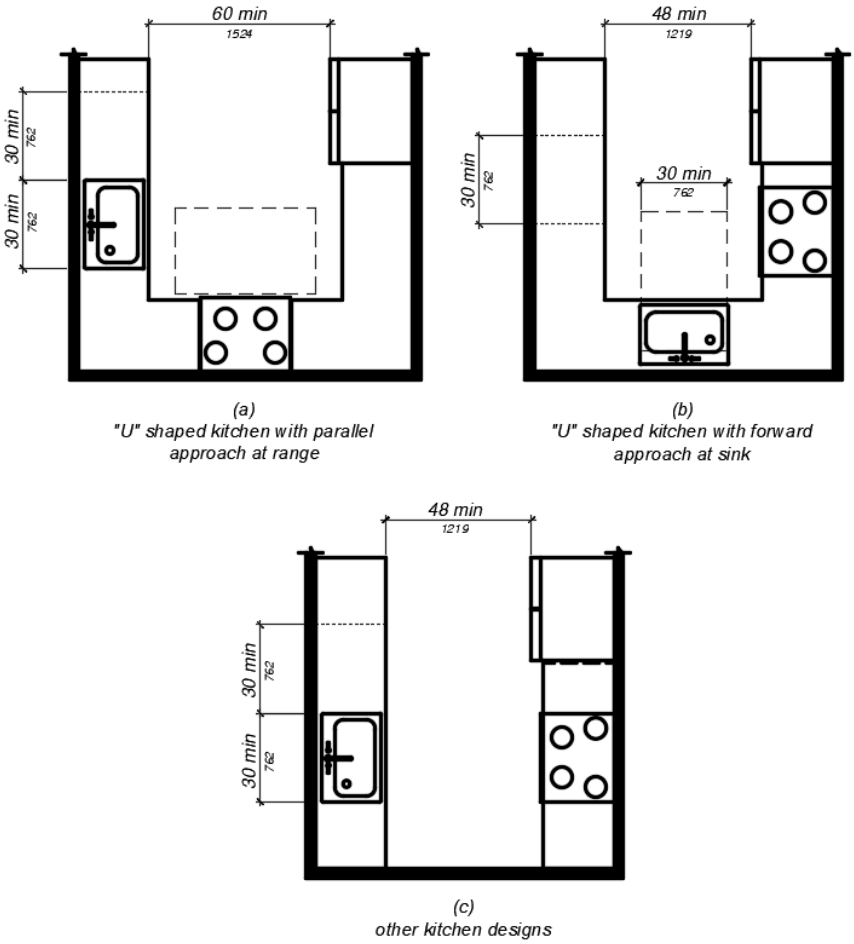
11B-809.9.2 Clear width. *Kitchens shall have a minimum clear width measured between any cabinet, work surface or the face of any appliance (excluding handles and controls) and the opposing cabinet, work surface, appliance or wall as follows:*

a. U-shaped kitchens, designed with parallel approach at a sink, range, cooktop or other fixtures and appliances located at the base of the U without knee and toe clearance, shall provide a clear width of 60 inches (1524 mm) minimum.

b. U-shaped kitchens, with a cooktop, sink or work surface located at the base of the U, that provides knee and toe space complying Sections 11B-809.9.3 and 11B-809.9.4 to allow for a forward approach, shall provide a clear width of 48 inches (1219 mm) minimum.

c. All other kitchen designs shall provide a clear width of 48 inches (1219 mm) minimum.

FIGURE 11B-809.9.2 —CLEAR WIDTH AT KITCHENS



11B-809.9.3 Removable base cabinets. *Knee and toe space complying with Section 11B-306 shall be provided at sinks and work surfaces required to comply with Section 11B-809.9.4.*

Exception: *Removable base cabinets shall be permitted under sinks and work surfaces provided that all of the following conditions are met:*

a) base cabinets can be removed without the use of specialized tools or knowledge;

b) the finish floor extends under the base cabinet; and

c) the walls behind and surrounding the base cabinets are finished.

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11B-809.9.4 Work surfaces. *Work surfaces shall be 36 inches (914 mm) maximum above the finish floor with minimum lengths at the following locations as required by this section:*

1. *Linear length of 30 inches (762 mm) minimum for installation of a sink.*
2. *Linear length of 30 inches (762 mm) minimum for work surfaces.*
3. *A sink and work surface in a single integral unit 60 inches (1524 mm) minimum in length, is permitted.*

11B-809.9.5 Lower shelving. *Lower shelving and/or drawer space shall be provided at a height of 48 inches (1219 mm) maximum above the finish floor.*

11B-809.9.6 Controls. *Controls for faucets shall comply with Section 11B-309.1. Hand-operated metering faucets shall remain open for 10 seconds minimum.*

11B-809.9.7 Exposed pipes and surfaces. *Exposed water supply and drain pipes under sinks and lavatories shall comply with Section 11B-606.5.*

11B-809.10 Bathrooms and powder rooms.

11B-809.10.1 General. *All bathrooms on an accessible route within residential dwelling units with adaptable features shall comply with Sections 11B-809.7, 11B-809.8, 11B-809.10.5.2, 11B-809.10.6.4, 11B-809.10.7.3 and 11B-809.12.*

11B-809.10.2 Number of complying bathrooms and fixtures. *One bathroom and one fixture of each type within the dwelling unit shall be designed to comply with the following:*

1. *Maneuvering space in bathrooms shall comply with Section 11B-809.10.4.*
2. *Bathtubs shall comply with Section 11B-809.10.5.*
3. *Showers shall comply with Section 11B-809.10.6.*
4. *Water closets shall comply with Section 11B-809.10.7.*
5. *Lavatories, vanities, mirrors and towel bars shall comply with Section 11B-809.10.8. When two or more lavatories are provided, at least one shall comply with Section 11B-809.10.8.*
6. *Where both a tub and shower are provided in the bathroom, at least one shall be made accessible. Where two or more bathrooms are provided, when a bathtub is installed in the first bathroom in compliance with Section 11B-809.10.5 and a shower compartment is provided in a subsequent bathroom, at least one shower compartment shall comply with Section 11B-809.10.6.*

11B-809.10.3 Powder rooms. *Powder rooms shall be designed to comply with Sections 11B-809.7, 11B-809.8, 11B-809.10.7.3 and 11B-809.12. When the powder room is the only toilet facility located on an accessible level it shall, in addition, comply with Sections 11B-809.10.4, 11B-809.10.7 and 11B-809.10.8.*

11B-809.10.4 Sufficient maneuvering space. *Where doors swing into the bathrooms or powder rooms required to comply with Section 11B-809.10, a clear maneuvering space of 30 inches (762 mm) by 48 inches (1219 mm) minimum shall be provided outside the arc of the door swing. The clear maneuvering space shall be permitted to include knee and toe clearance under bathroom fixtures. Doors shall be permitted to encroach into the clear floor space or clearance for fixtures where clear maneuvering space is provided outside the arc of the door swing. A turning space is not required within the room.*

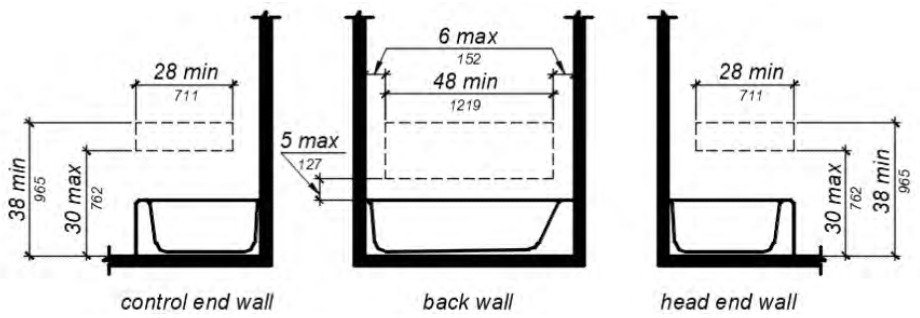
11B-809.10.5 Bathtubs. *Bathtubs required by Section 11B-809.10 shall comply with this section.*

11B-809.10.5.1 Clear floor space. *A clear floor space 30 inches (762 mm) minimum by 48 inches (1219 mm) minimum shall be located with the long edge of the clear floor space parallel to the side of the bathtub or bathtub-shower combination. Controls shall be located on the wall at the foot of the bathtub. The edge of the clear floor space shall be flush with the control wall surface. The area under a lavatory, located at the control end of the tub, shall be permitted to encroach on the clear floor space provided the lavatory is 19 inches (483 mm) maximum in depth, and knee and toe clearance complying with Section 11B-306 is provided. Cabinets under lavatories and toilets shall not encroach on the clear floor space.*

11B-809.10.5.2 Reinforcement for grab bars. *Reinforcement for grabs bars shall comply with the following:*

1. *Where bathtubs are installed without surrounding walls reinforcement shall be provided for floor-mounted grab bars.*
2. *Where bathtubs are installed with surrounding walls, grab bar reinforcement shall be installed as follows:*
    a. *At the control end wall and head end wall, between 30 inches (762 mm) maximum to 38 inches (965 mm) minimum above the finish floor, extending 28 inches (711 mm) minimum from the front edge of the bathtub to the back wall of the bathtub. The grab bar reinforcement shall be 8 inches (203 mm) minimum in height.*
    b. *At the back wall, from 5 inches (127 mm) maximum above the bathtub rim to 38 inches (965 mm) minimum above the finish floor. Grab bar backing shall be installed horizontally to permit the installation of a 48-inch (1219 mm) grab bar with each end 6 inches (152 mm) maximum from the end walls of the bathtub.*

FIGURE 11B-809.10.5.2—REINFORCEMENT FOR GRAB BARS



11B-809.10.5.3 Controls. *Controls and operating mechanisms shall comply with Section 11B-309.4.*

Exception: *Shower spray units are not required in bathtubs.*

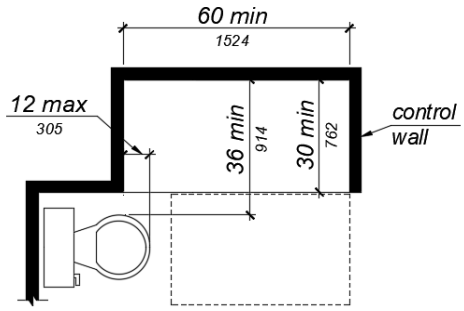
11B-809.10.5.4 Bathtub enclosures. *Doors and panels of bathtub enclosures shall be constructed from approved, shatter-resistant materials. Hinged doors shall open outward. Glazing used in doors and panels of bathtub enclosures shall be fully tempered, laminated safety glass or approved plastic. When glass is used, it shall be $^{1}/_{8}$-inch (3.2 mm) thick minimum when fully tempered, or $^{1}/_{4}$-inch (6.4 mm) thick minimum when laminated, and shall pass the test requirements of this part, Chapter 24 Glass and Glazing. Plastics used in doors and panels of bathtub enclosures shall be of a shatter-resistant type.*

11B-809.10.6 Showers. *Showers required by Section 11B-809.10 shall comply with this section.*

11B-809.10.6.1 Size. *When one or more shower stalls are provided within the same dwelling unit, at least one shower stall shall comply with one of the following:*

1. *A transfer type shower compartment 36 inches (914 mm) wide by 36 inches (914 mm) deep, clear inside dimensions measured at center points of opposing sides, with an entrance opening 36 inches (914 mm) wide; or*
2. *A shower stall 30 inches (762 mm) deep minimum by 60 inches (1524 mm) wide minimum with an entrance opening 60 inches (1524 mm) minimum. A water closet shall be permitted to project 12 inches (305 mm) maximum into the opening provided that 36 inches (914 mm) minimum clear space is maintained between the water closet and the shower wall as illustrated in Figure 11B-809.10.6.1; or*
3. *A shower stall 36 inches (914 mm) deep by 60 inches (1524 mm) wide minimum with an entrance 36 inches (914 mm) minimum when a wall is installed on the opening side.*

FIGURE 11B-809.10.6.1—SHOWERS



11B-809.10.6.2 Slope. *The slope of the shower floor shall be $^{1}/_{2}$ inch (12.7 mm) per foot maximum in any direction and shall slope to a drain. The floor surfaces shall be of Carborundum, grit-faced tile or of material providing equivalent slip resistance.*

11B-809.10.6.3 Clearance. *A clearance of 36 inches (914 mm) wide minimum by 48 inches (1219 mm) long minimum measured from the control wall shall be provided outside the shower as illustrated in Figure 11B-809.10.6.3.*

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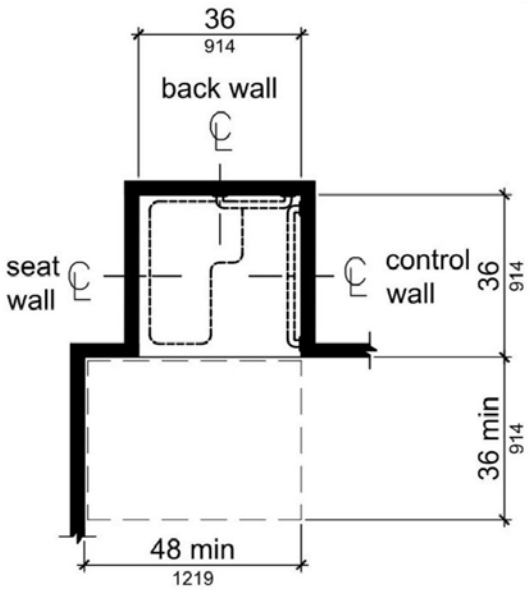
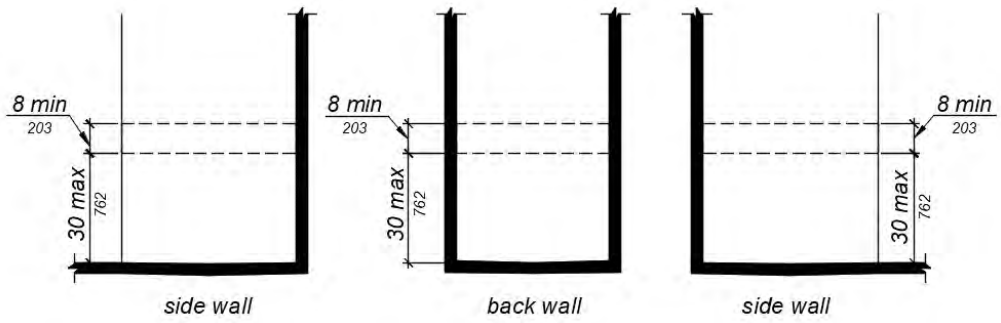
FIGURE 11B-809.10.6.3—TRANSFER TYPE SHOWER CLEARANCE



Note: inside finished dimensions measured at the center points of opposing sides

11B-809.10.6.4 Reinforcement for grab bars. *Reinforcement for grabs bars shall comply with the following: Continuous reinforcement shall be installed in the walls of showers 30 inches (762 mm) maximum to 38 inches (965 mm) minimum above the finish floor. The grab bar reinforcement shall be 8 inches (203 mm) minimum in height. Glass-walled shower stalls shall provide reinforcement for installation of floor-mounted or ceiling-mounted grab bars.*

FIGURE 11B-809.10.6.4—REINFORCEMENT FOR GRAB BARS



11B-809.10.6.5 Thresholds. *Where provided thresholds shall be 2 inches (51 mm) maximum in height and have a beveled or sloped angle not exceeding 1 unit vertical in 2 units horizontal (26.6 degrees from the horizontal). Thresholds $^{1}/_{2}$ inch (12.7 mm) or less in height shall have a beveled or sloped angle not exceeding 1 unit vertical in 1 unit horizontal (45 degrees from the horizontal).*

11B-809.10.6.6 Controls. *Controls and operating mechanisms shall comply with Section 11B-309.4.*

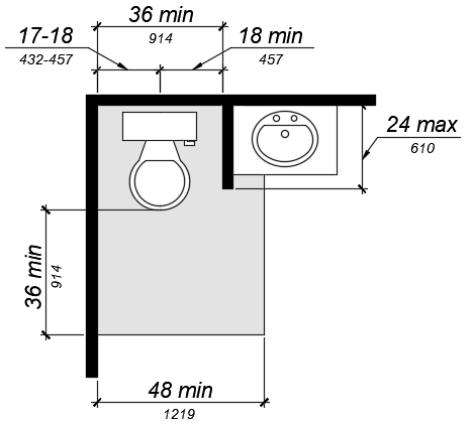
11B-809.10.6.7 Shower enclosures. *Doors and panels of shower enclosures shall comply with Section 11B-809.10.5.4.*

11B-809.10.7 Water closets. *Water closets required by Section 11B-809.10 shall comply with this section.*

11B-809.10.7.1 Floor space. *The floor space at water closets shall be 48 inches (1219 mm) wide minimum measured perpendicular to the side wall. A floor space 48 inches (1219 mm) wide minimum by 36 inches (914 mm) deep minimum shall be provided in front of the water closet.*

Exception: *The 48-inch (1219 mm) minimum clear width may be reduced to 36 inches (914 mm) minimum for lavatories, cabinets, wing walls or privacy walls located immediately adjacent to a water closet which extend 24 inches (610 mm) maximum in depth.*

FIGURE 11B-809.10.7.1—FLOOR SPACE

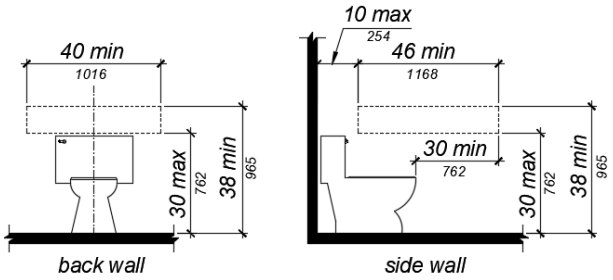


11B-809.10.7.2 Location. *Water closets shall be located within bathrooms in a manner that permits a grab bar to be installed on at least one side of the fixture. The centerline of the water closet shall be 17 inches (432 mm) minimum to 18 inches (457 mm) maximum from a wall or partition that is 54 inches (1372 mm) minimum in length. In locations where water closets are adjacent to other walls, vanities, lavatories or bathtubs, the centerline of the fixture shall be 18 inches (457 mm) minimum from the obstacle.*

11B-809.10.7.3 Reinforcement for grab bars. *Reinforcement for grabs bars shall comply with the following:*

1. *Where water closets are not placed adjacent to a side wall capable of accommodating a grab bar, the bathroom shall have provisions for installation of floor-mounted, foldaway or similar alternative grab bars.*
2. *Where water closets are placed adjacent to a side wall, reinforcement shall be installed on both sides or one side and the back. Where reinforcement is installed at the back, it shall be installed between 30 inches (762 mm) maximum and 38 inches (965 mm) minimum above the finish floor. The grab bar reinforcement shall be 8 inches (203 mm) minimum in height. The backing shall be 40 inches (1016 mm) minimum in length.*
3. *Where the water closet is located adjacent to lavatories, cabinets, wing walls or privacy walls, the grab bar reinforcement shall be 36 inches (914 mm) in length. Reinforcement installed at the side wall of the water closet shall be between 30 inches (762 mm) minimum to 38 inches (965 mm) maximum above the finish floor. The reinforcement shall be 10 inches (254 mm) maximum from the rear wall and shall extend 30 inches (762 mm) minimum in front of the water closet. The grab bar reinforcement shall be 8 inches (203 mm) minimum in height.*

FIGURE 11B-809.10.7.3—REINFORCEMENT FOR GRAB BARS



11B-809.10.7.4 Seat height. *Water closet seats shall be 15 inches (381 mm) minimum and 19 inches (483 mm) maximum measured to the top of the seat above the finish floor.*

11B-809.10.7.5 Controls. *Controls shall be mounted 44 inches (1118 mm) maximum above the finish floor. The force required to activate controls shall be 5 pounds (22.2 N) maximum.*

11B-809.10.8 Lavatories, vanities, mirrors and towel bars. *Bathrooms or powder rooms required to comply with Section 11B-809.10 shall provide lavatories complying with this section. Where mirrors or towel bars are provided, no less than one of each shall comply with this section.*

11B-809.10.8.1 Location. *Lavatories without base cabinets shall be installed with the centerline 18 inches (457 mm) minimum from an adjoining wall or fixture to allow for forward approach. Lavatories with base cabinets shall be installed with the centerline 24 inches (610 mm) minimum from an adjoining wall or fixture to allow for a parallel approach. The top of the lavatory rim shall be 34 inches (864 mm) maximum above the finished floor.*

11B-809.10.8.2 Floor space. *A floor space 30 inches (762 mm) minimum by 48 inches (1219 mm) minimum shall be provided centered on the lavatory.*

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11B-809.10.8.3 Cabinets*. Cabinets shall be removable without the use of specialized knowledge and/or tools. The finished floor shall extend to the wall under the lavatory.*

11B-809.10.8.4 Knee and toe clearance. *Knee and toe clearance shall be provided and comply with Section 11B-306.*

11B-809.10.8.5 Plumbing protection. *Plumbing protection shall comply with Section 11B-809.9.7.*

11B-809.10.8.6 Controls. *Faucet controls and operating mechanisms shall comply with Section 11B-309.4.*

11B-809.10.8.7 Mirrors and towel bars. *Where mirrors are provided the bottom edge of the reflective surface shall be 40 inches (1016 mm) maximum above the finish floor. Where towel bars are provided, they shall be installed 40 inches (1016 mm) maximum above the finish floor to the top of the bar.*

11B-809.11 Washing machines and clothes dryers. *Where washing machines and clothes dryers are provided in residential dwelling units with adaptable features, one of each type shall be provided.*

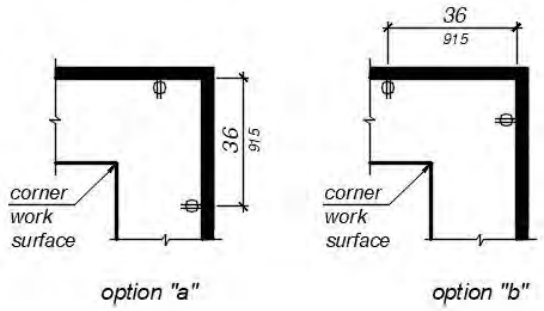
11B-809.12 Electrical receptacles, controls and switches. *Electrical receptacles on branch circuits of 30 amperes or less, communication system receptacles, controls and switches shall be located as follows:*

1. *Where there is no obstruction, 48 inches (1219 mm) maximum measured from the top of the receptacle box and 15 inches (381 mm) minimum measured from the bottom of the receptacle box to the finish floor.*
2. *Where the reach is over an obstruction, electrical receptacles, controls and switches shall comply with Sections 11B-308.3 and 11B-309.2.*
3. *When the reach is over a kitchen work surface and base cabinet, the work surface shall be 36 inches (914 mm) maximum above the finish floor and 25 1/2 inches (650 mm) maximum in depth. The base cabinet shall be 24 inches (610 mm) maximum in depth.*
4. *Where receptacles are provided in a kitchen at a corner work surface, one receptacle shall be located 36 inches (915 mm) from either wall at the inside corner.*

Exceptions:

a. *Electrical receptacles installed as part of permanently installed baseboard heaters.*
b. *Electrical receptacles in floors adjacent to sliding panels or walls.*
c. *Baseboard electrical receptacles in relocatable partitions, window walls or other electrical convenience floor outlets.*
d. *Appliances (e.g., stoves, dishwashers, range hoods, microwave ovens and similar appliances) which have controls located on the appliance.*
e. *Electrical receptacles dedicated to specific appliances.*
f. *Circuit breakers.*

FIGURE 11B-809.12—ELECTRICAL RECEPTACLES AT CORNER WORKSURFACES



SECTION 11B-810—TRANSPORTATION FACILITIES

***11B*-810.1 General.** Transportation facilities shall comply with *Section 11B*-810.

11B-810.1.1 Vehicle boarding. *Stations shall not be designed or constructed so as to require persons with disabilities to board or alight from a vehicle at a location other than one used by the general public.*

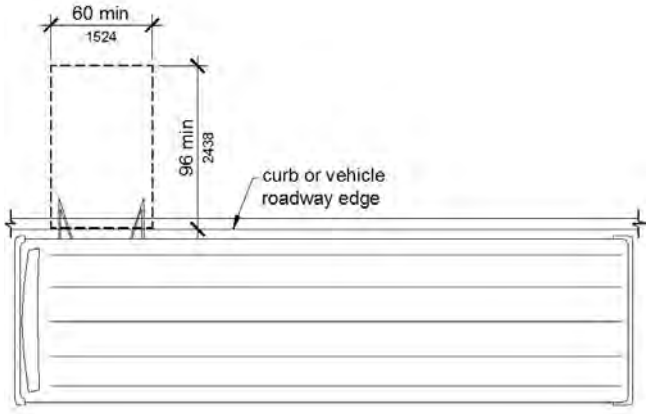
11B-810.1.2 Baggage systems. *Baggage check-in and retrieval systems shall be on an accessible route complying with Section 11B-402 and shall have space immediately adjacent complying with Section 11B-302.*

***11B*-810.2 Bus boarding and alighting areas.** Bus boarding and alighting areas shall comply with *Section 11B*-810.2.

***11B*-810.2.1 Surface.** Bus stop boarding and alighting areas shall have a firm, stable surface.

***11B*-810.2.2 Dimensions.** Bus stop boarding and alighting areas shall provide a clear length of 96 inches (*2438* mm) minimum, measured perpendicular to the curb or vehicle roadway edge, and a clear width of 60 inches (*1524* mm) minimum, measured parallel to the vehicle roadway.

FIGURE *11B*-810.2.2—DIMENSIONS OF BUS BOARDING AND ALIGHTING AREAS

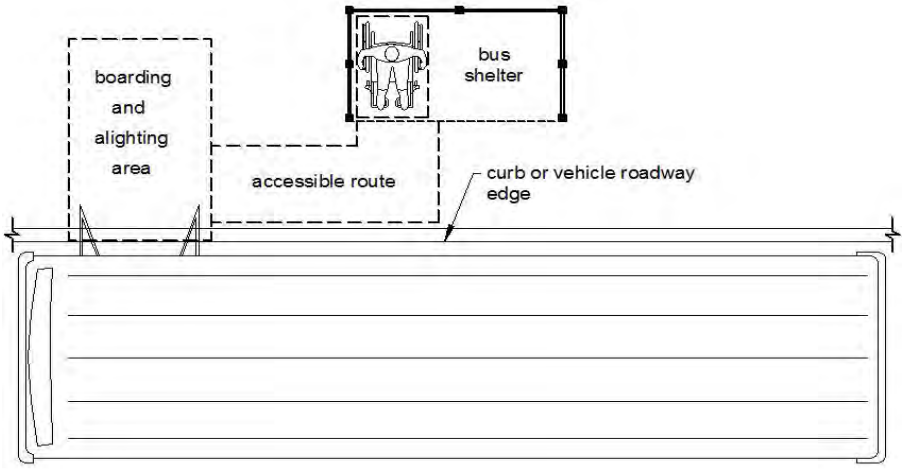


***11B*-810.2.3 Connection.** Bus stop boarding and alighting areas shall be connected to streets, sidewalks or pedestrian paths by an accessible route complying with *Section 11B*-402*. Newly constructed bus stop boarding and alighting areas shall provide a detectable transition between the boarding/alighting area and the roadway; the detectable transition shall consist of a curb with the face sloped at 35 degrees maximum from vertical or detectable warnings complying with Sections 11B-705.1.1 and 11B-705.1.2.4.*

***11B*-810.2.4 Slope.** Parallel to the roadway, the slope of the bus stop boarding and alighting area shall be the same as the roadway, to the maximum extent practicable. Perpendicular to the roadway, the slope of the bus stop boarding and alighting area shall not be steeper than 1:48.

***11B*-810.3 Bus shelters.** Bus shelters shall provide a minimum clear floor or ground space complying with *Section 11B*-305 entirely within the shelter. Bus shelters shall be connected by an accessible route complying with *Section 11B*-402 to a boarding and alighting area complying with *Section 11B*-810.2.

FIGURE *11B*-810.3—BUS SHELTERS



***11B*-810.4 Bus signs.** Bus route identification signs shall comply with *Sections 11B*-703.5.1 through *11B*-703.5.4 and *Sections 11B*-703.5.7 and *11B*-703.5.8. In addition, to the maximum extent practicable, bus route identification signs shall comply with *Section 11B*-703.5.5.

Exception: Bus schedules, timetables and maps that are posted at the bus stop or bus bay shall not be required to comply.

***11B*-810.5 Rail platforms.** Rail platforms shall comply with *Section 11B*-810.5.

***11B*-810.5.1 Slope.** Rail platforms shall not exceed a slope of 1:48 in all directions.

Exception: Where platforms serve vehicles operating on existing track or track laid in existing roadway, the slope of the platform parallel to the track shall be permitted to be equal to the slope (grade) of the roadway or existing track.

***11B*-810.5.2 Detectable warnings.** Platform boarding edges not protected by platform screens or guards shall have detectable warnings complying with *Section 11B*-705 along the full length of the public use area of the platform.

***11B*-810.5.3 Platform and vehicle floor coordination.** Station platforms shall be positioned to coordinate with vehicles in accordance with the applicable requirements of 36 CFR Part 1192. Low-level platforms shall be 8 inches (*203* mm) minimum above top of rail.

Exception: Where vehicles are boarded from sidewalks or street-level, low-level platforms shall be permitted to be less than 8 inches (*203* mm).

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***11B*-810.6 Rail station signs.** Rail station signs shall comply with *Section 11B*-810.6.

Exception: Signs shall not be required to comply with *Sections 11B*-810.6.1 and *11B*-810.6.2 where audible signs are remotely transmitted to hand-held receivers or are user- or proximity-actuated.

***11B*-810.6.1 Entrances.** Where signs identify a station or its entrance, at least one sign at each entrance shall comply with *Section 11B*-703.2 and shall be placed in uniform locations to the maximum extent practicable. Where signs identify a station that has no defined entrance, at least one sign shall comply with *Section 11B*-703.2 and shall be placed in a central location.

***11B*-810.6.2 Routes and destinations.** Lists of stations, routes and destinations served by the station which are located on boarding areas, platforms or mezzanines shall comply with *Section 11B*-703.5. At least one tactile sign identifying the specific station and complying with *Section 11B*-703.2 shall be provided on each platform or boarding area. Signs covered by this requirement shall, to the maximum extent practicable, be placed in uniform locations within the system.

Exception: Where sign space is limited, characters shall not be required to exceed 3 inches (*76* mm).

***11B*-810.6.3 Station names.** Stations covered by this section shall have identification signs complying with *Section 11B*-703.5. Signs shall be clearly visible and within the sight lines of standing and sitting passengers from within the vehicle on both sides when not obstructed by another vehicle.

***11B*-810.7 Public address systems.** Where public address systems convey audible information to the public, the same or equivalent information shall be provided in a visual format.

***11B*-810.8 Clocks.** Where clocks are provided for use by the public, the clock face shall be uncluttered so that its elements are clearly visible. Hands, numerals and digits shall contrast with the background either light-on-dark or dark-on-light. Where clocks are installed overhead, numerals and digits shall comply with *Section 11B*-703.5.

***11B*-810.9 Escalators.** Where provided, escalators shall comply with Sections 6.1.3.5.6 and 6.1.3.6.5 of ASME A17.1 and shall have a clear width of 32 inches (*813* mm) minimum.

Exception: Existing escalators in key stations shall not be required to comply with *Section 11B*-810.9.

***11B*-810.10 Track crossings.** Where a circulation path serving boarding platforms crosses tracks, it shall comply with *Section 11B*-402.

Exception: Openings for wheel flanges shall be permitted to be $2^1/_2$ inches (64 mm) maximum.

FIGURE *11B*-810.10 (EXCEPTION)—TRACK CROSSINGS

SECTION 11B-811—STORAGE

***11B*-811.1 General.** Storage shall comply with *Section 11B*-811.

***11B*-811.2 Clear floor or ground space.** A clear floor or ground space complying with *Section 11B*-305 shall be provided.

***11B*-811.3 Height.** Storage elements shall comply with at least one of the reach ranges specified in *Section 11B*-308.

***11B*-811.4 Operable parts.** Operable parts shall comply with *Section 11B*-309.

SECTION 11B-812—ELECTRIC VEHICLE CHARGING STATIONS

11B-812.1 General. *Electric vehicle charging stations (EVCS) shall comply with Section 11B-812 as required by Section 11B-228.3. Where vehicle spaces and access aisles are marked with lines, measurements shall be made from the centerline of the markings.*

Exception: *Where vehicle spaces or access aisles are not adjacent to another vehicle space, access aisle or parking space, measurements shall be permitted to include the full width of the line defining the vehicle space or access aisle.*

11B-812.2 Operable parts. *Operable parts shall comply with Section 11B-309.*

11B-812.3 Floor or ground surfaces. *Vehicle spaces and access aisles serving them shall comply with Section 11B-302. Access aisles shall be at the same level as the vehicle space they serve. Changes in level, slopes exceeding 1:48, and detectable warnings shall not be permitted.*

11B-812.4 Vertical clearance. *Vehicle spaces, access aisles serving them, and vehicular routes serving them shall provide a vertical clearance of 98 inches (2489 mm) minimum. Where provided, overhead cable management systems shall not obstruct required vertical clearance.*

11B-812.5 Accessible routes

11B-812.5.1 Accessible route to building or facility. *EVCS complying with Section 11B-812 that serve a particular building or facility shall be located on an accessible route to an entrance complying with Section 11B-206.4. Where EVCS do not serve a particular building or facility, EVCS complying with Section 11B-812 shall be located on an accessible route to an accessible pedestrian entrance of the EV charging facility.*

Exception: *EVCS complying with Section 11B-812 shall be permitted to be located in different EV charging facilities if substantially equivalent or greater accessibility is provided in terms of distance from an accessible entrance or entrances, charging fee, and user convenience.*

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11B-812.5.2 Accessible route to EV charger. *An accessible route complying with Section 11B-402 shall connect the vehicle space and the EV charger which serves it.*

11B-812.5.3 Relationship to accessible routes. *Vehicle spaces and access aisles shall be designed so that when the vehicle space is occupied the required clear width of adjacent accessible routes is not obstructed. A curb, wheel stop, bollards or other barrier shall be provided if required to prevent encroachment of vehicles over the required clear width of adjacent accessible routes.*

11B-812.5.4 Arrangement. *Vehicle spaces and access aisles shall be designed so that persons using them are not required to travel behind vehicle spaces or parking spaces other than the vehicle space in which their vehicle has been left to charge.*

Exceptions:

1. *Ambulatory EVCS shall not be required to comply with Section 11B-812.5.4.*
2. *Vehicle spaces installed in existing facilities shall comply with Section 11B-812.5.4 to the maximum extent feasible.*

11B-812.5.5 Obstructions. *EVCS shall be designed so accessible routes are not obstructed by cables or other elements.*

11B-812.6 Vehicle spaces. *Vehicle spaces serving van accessible, standard accessible, ambulatory and drive-up EVCS shall be 216 inches (5486 mm) long minimum and shall com ply with Sections 11B-812.6.1 through 11B-812.6.4 as applicable. All vehicle spaces shall be marked to define their width.*

Exceptions:

1. *Where the long dimension of vehicle spaces is parallel to the traffic flow in the adjacent vehicular way, the length of vehicle spaces shall be 240 inches (6096 mm) minimum.*
2. *Vehicle spaces at drive-up EVCS shall be 240 inches (6096 mm) long minimum and shall not be required to be marked to define their width.*

11B-812.6.1 Van accessible. *Vehicle spaces serving van accessible EVCS shall be 144 inches (3658 mm) wide minimum and shall have an adjacent access aisle complying with Section 11B-812.7.*

11B-812.6.2 Standard accessible. *Vehicle spaces serving standard accessible EVCS shall be 108 inches (2743 mm) wide minimum and shall have an adjacent access aisle complying with Section 11B-812.7.*

11B-812.6.3 Ambulatory. *Vehicle spaces serving ambulatory EVCS shall be 120 inches (3048 mm) wide minimum and shall not be required to have an adjacent access aisle.*

11B-812.6.4 Drive-up. *Vehicle spaces serving drive-up EVCS shall be 204 inches (5182 mm) wide minimum and shall not be required to have an adjacent access aisle.*

11B-812.7 Access aisle. *Access aisles shall adjoin an accessible route. Two vehicle spaces or one parking space and one electric vehicle charging space shall be permitted to share a common access aisle. Access aisles shall be 60 inches (1524 mm) wide minimum and shall extend the full required length of the vehicle spaces they serve.*

11B-812.7.1 Location. *Access aisles at vehicle spaces shall not overlap the vehicular way and may be placed on either side of the vehicle space they serve except for van accessible spaces which shall have access aisles located on the passenger side of the vehicle spaces.*

Exception: *Where four or fewer total EVCS are provided within a facility, the access aisle for non-angled van accessible spaces may be located on either the driver or passenger side of the vehicle space.*

11B-812.7.2 Marking. *Access aisles at vehicle spaces shall be marked with a painted borderline around their perimeter. The area within the borderlines shall be marked with hatched lines a maximum of 36 inches (914 mm) on center. The color of the borderlines, hatched lines and letters shall contrast with that of the surface of the access aisle. The blue color required for identification of access aisles for accessible parking shall not be used. Access aisle markings may extend beyond the minimum required length.*

Exception: *Where one parking space and one electric vehicle charging space share an access aisle, access aisle marking shall comply with Section 11B-502.3.3 and shall not be required to comply with Section 11B-812.7.2.*

11B-812.7.3 Lettering. *The words "NO PARKING" shall be painted on the surface within each access aisle in letters a minimum of 12 inches (305 mm) in height and located to be visible from the adjacent vehicular way.*

11B-812.8 Identification signs. *EVCS identification signs shall be provided in compliance with Section 11B-812.8.*

11B-812.8.1 Four or fewer. *Where four or fewer total EVCS are provided, identification with an International Symbol of Accessibility (ISA) and signs identifying van accessible spaces shall not be required.*

11B-812.8.2 Five to twenty-five. *Where five to twenty-five total EVCS are provided, one van accessible EVCS shall be identified by an ISA complying with Section 11B-703.7.2.1. The required standard accessible EVCS shall not be required to be identified with an ISA.*

11B-812.8.3 Twenty-six or more. *Where twenty-six or more total EVCS are provided, all required van accessible and all required standard accessible EVCS shall be identified by an ISA complying with Section 11B-703.7.2.1.*

11B-812.8.4 Ambulatory. *Ambulatory EVCS shall not be required to be identified by an ISA.*

11B-812.8.5 Drive-up. *Drive-up EVCS shall not be required to be identified by an ISA.*

11B-812.8.6 Finish and size. *Identification signs shall be reflectorized with a minimum area of 70 square inches (45 161 mm^2).*

11B-812.8.7 Location. *Required identification signs shall be visible from the EVCS it serves. Signs shall be permanently posted either immediately adjacent to the vehicle space or within the projected vehicle space width at the head end of the vehicle space. Signs identifying van accessible vehicle spaces shall contain the designation "van accessible." Signs shall be 60 inches (1525 mm) minimum*

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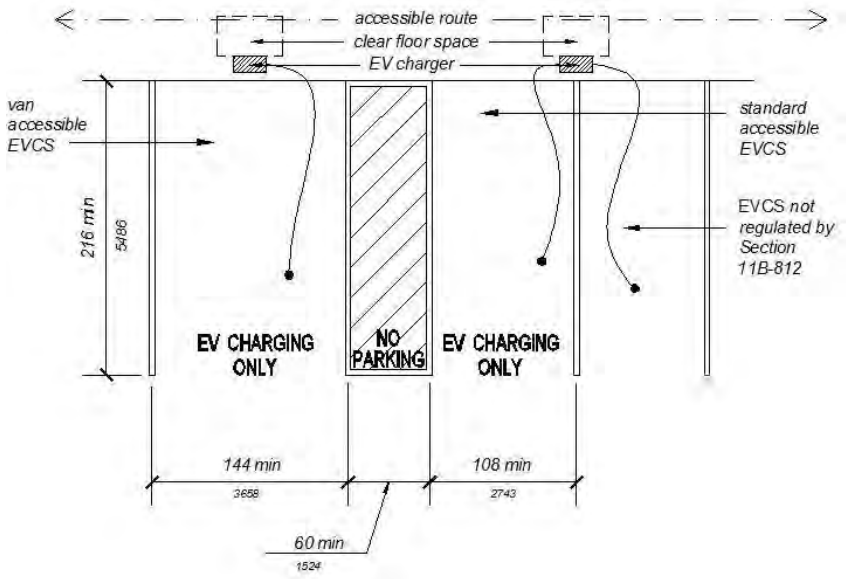
above the finish floor or ground surface measured to the bottom of the sign. Signs located within a circulation path shall be 80 inches (2032 mm) minimum above the finish floor or ground surface measured to the bottom of the sign. Signs may also be permanently posted on a wall at the interior end of the vehicle space.

11B-812.9 Surface marking. *EVCS vehicle spaces shall provide surface marking stating "EV CHARGING ONLY" in letters 12 inches (305 mm) high minimum. The centerline of the text shall be a maximum of 6 inches (152 mm) from the centerline of the vehicle space and its lower corner at, or lower side aligned with, the end of the vehicle space length.*

FIGURE 11B-812.9—SURFACE MARKING



11B-812.10 Electric vehicle chargers

11B-812.10.1 General. *EV chargers shall comply with Section 11B-812.10.*

11B-812.10.2 Operable parts. *Operable parts and charging cord storage shall comply with Section 11B-309.*

11B-812.10.3 Point-of-sale devices. *Where provided, point-of-sale devices shall comply with Sections 11B-707.2, 11B-707.3, 11B-707.7.2 and 11B-707.9.*

11B-812.10.4 Location. *EV chargers shall be adjacent to, and within the projected width of, the vehicle space being served.*

Exceptions:

1. *EV chargers serving more than one EVCS shall be adjacent to, and within the combined projected width of, the vehicle spaces being served.*
2. *For alterations at existing facilities where an accessible route or general circulation path is not provided adjacent to the head end of the vehicle space or access aisle, the EV charger may be located within the projected width of the access aisle 36 inches (914 mm) maximum from the head end of the space.*
3. *Where the long dimension of a vehicle space is parallel to the vehicular way, the EV charger shall be adjacent to, and 48 inches (1219 mm) maximum from the head end or foot end of the vehicle space or access aisle being served.*

SECTION 11B-813—ADULT CHANGING FACILITIES

11B-813 Adult changing facilities. *Adult changing facilities shall comply with Section 11B-813.*

11B-813.1 Location. *Adult changing facilities shall be provided within a unisex (single-user or family) toilet room or other similar private room.*

11B-813.2 Features. *Adult changing facilities shall provide features in compliance with Section 11B-813.2.*

11B-813.2.1 Adult changing table. *Adult changing tables shall be fixed to the floor or a wall and shall comply with Section 11B-813.2.1.*

11B-813.2.1.1 Size. *Adult changing tables shall have a changing surface of 70 inches (1778 mm) minimum length and 30 inches (762 mm) minimum width.*

11B-813.2.1.2 Clearance. *A 36 inches (914 mm) minimum width side clearance shall be provided along the entire length of one side of adult changing tables. At both ends of adult changing tables, clearance shall be provided measuring 36 inches (914 mm) minimum wide and a minimum length as long as the table width plus the width of the side clearance. End and side clearances shall be measured from the outermost extent of the table. Floor or ground surfaces of clearances shall comply with Section 11B-302. Changes in level are not permitted.*

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11B-813.2.1.3 Height and operation. *Adult changing table height shall be adjustable from 17 inches (432 mm) above the floor or ground to 38 inches (965 mm) above the floor or ground, as measured to the top of the changing surface. Height adjustability shall be powered. Operable parts shall comply with Section 11B-309.*

11B-813.2.1.4 Capacity. *Adult changing tables shall provide a minimum weight capacity of 300 pounds (136 kg).*

11B-813.2.1.5 Obstructions. *When deployed, changing tables shall not obstruct the required width of an accessible route except as allowed by Section 11B-307.2.*

11B-813.2.2 Water closet. *No fewer than one water closet in compliance with Section 11B-604.*

11B-813.2.3 Lavatory. *One lavatory in compliance with Section 11B-606.*

11B-813.2.4 Waste receptacle. *No fewer than one waste receptacle in compliance with Section 11B-603.5.*

11B-813.2.5 Coat hook. *No fewer than one coat hook shall be provided in close proximity to the changing table and within one of the reach ranges specified in Section 11B-308.*

11B-813.2.6 Shelf. *No fewer than one shelf shall be provided in close proximity to the changing table at 40 inches (1016 mm) minimum and 48 inches (1219 mm) maximum above the finish floor.*

11B-813.2.7 Accessories. *Where provided, no fewer than one of each accessory shall comply with Section 11B-603.5.*

11B-813.2.8 Turning space. *Turning space complying with Section 11B-304 shall be provided within adult changing facilities.*

11B-813.2.9 Overlap. *Required clear floor spaces, clearance at fixtures and turning space shall be permitted to overlap.*

11B-813.2.10 Door swing. *A door, in any position, shall be permitted to encroach into the turning space by 12 inches (305 mm) maximum. Where a clear floor space complying with Section 11B-305.3 is provided within the room beyond the arc of the door swing, doors shall be permitted to swing into the clear floor space, clearance required for any fixture and clearance required for adult changing tables.*

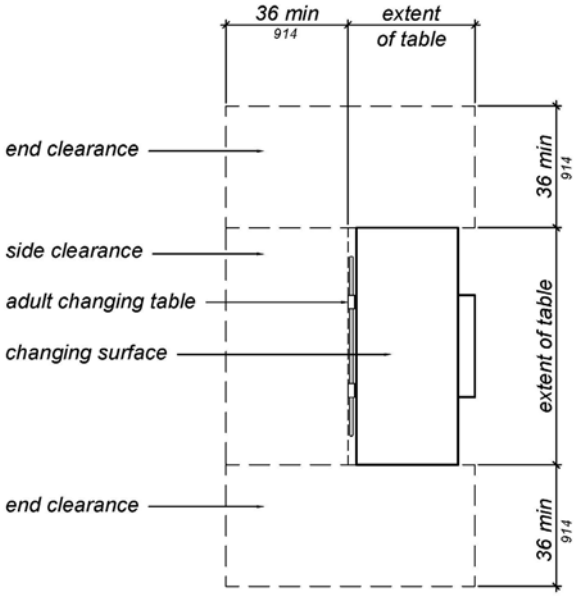
11B-813.2.11 Privacy latch. *Each door to adult changing facilities shall have a privacy latch.*

11B-813.2.12 Signs. *A room identification sign complying with Section 11B-216 shall be provided at entrances to adult changing facilities. The text of the room identification sign shall be "ADULT CHANGING ROOM".*

An informational sign complying with Section 11B-216 shall be provided within adult changing facilities and in close proximity to the changing table. The informational sign shall indicate the maximum weight capacity of the adult changing table, as determined by the table manufacturer.

Where the commercial place of public amusement has a central directory, the central directory shall indicate the location of adult changing facilities. Where other directories indicate the location of toilet facilities, the other directories shall also indicate the location of adult changing facilities.

FIGURE 11B-813.2.1.2—CLEARANCE AROUND ADULT CHANGING TABLE



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DIVISION 9: BUILT-IN ELEMENTS

SECTION 11B-901—GENERAL

***11B*-901.1 Scope.** The provisions of *Division* 9 shall apply where required by *Division* 2 or where referenced by a requirement in this *chapter.*

SECTION 11B-902—DINING SURFACES AND WORK SURFACES

***11B*-902.1 General.** Dining surfaces and work surfaces shall comply with *Sections 11B*-902.2 and *11B*-902.3.

Exception: Dining surfaces and work surfaces for children's use shall be permitted to comply with *Section 11B*-902.4.

***11B*-902.2 Clear floor or ground space.** A clear floor space complying with *Section 11B*-305 positioned for a forward approach shall be provided. Knee and toe clearance complying with *Section 11B*-306 shall be provided.

11B-902.2.1 Overlap. *The clear floor space at dining surfaces shall not overlap the accessible route.*

***11B*-902.3 Height.** The tops of dining surfaces and work surfaces shall be 28 inches (*711* mm) minimum and 34 inches (*864* mm) maximum above the finish floor or ground.

***11B*-902.4 Dining surfaces and work surfaces for children's use.** Accessible dining surfaces and work surfaces for children's use shall comply with *Section 11B*-902.4.

Exception: Dining surfaces and work surfaces that are used primarily by children 5 years and younger shall not be required to comply with *Section 11B*-902.4 where a clear floor or ground space complying with *Section 11B*-305 positioned for a parallel approach is provided.

***11B*-902.4.1 Clear floor or ground space.** A clear floor space complying with *Section 11B*-305 positioned for forward approach shall be provided. Knee and toe clearance complying with *Section 11B*-306 shall be provided, except that knee clearance 24 inches (610 mm) minimum above the finish floor or ground shall be permitted.

***11B*-902.4.2 Height.** The tops of tables and counters shall be 26 inches (660 mm) minimum and 30 inches (*762* mm) maximum above the finish floor or ground.

SECTION 11B-903—BENCHES

***11B*-903.1 General.** Benches shall comply with *Section 11B*-903.

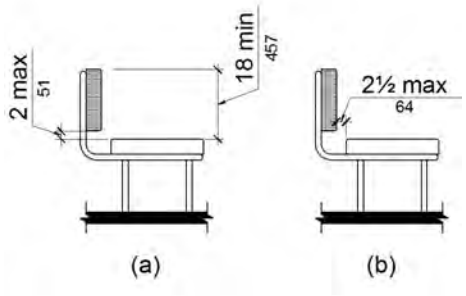
***11B*-903.2 Clear floor or ground space.** Clear floor or ground space complying with *Section 11B*-305 shall be provided and shall be positioned at the end of the bench seat and parallel to the short axis of the bench.

***11B*-903.3 Size.** Benches shall have seats that are *48* inches (*1219* mm) long minimum and 20 inches (*508* mm) deep minimum and 24 inches (610 mm) deep maximum.

***11B*-903.4 Back support.** The bench shall provide for back support or shall be affixed to a wall *along its long dimension.* Back support shall be 48 inches (*1219* mm) long minimum and shall extend from a point 2 inches (51 mm) maximum above the seat surface to a point 18 inches (*457* mm) minimum above the seat surface. Back support shall be $2^1/_2$ inches (64 mm) maximum from the rear edge of the seat measured horizontally.

***11B*-903.5 Height.** The top of the bench seat surface shall be 17 inches (*432* mm) minimum and 19 inches (*483* mm) maximum above the finish floor or ground.

FIGURE *11B*-903.4—BENCH BACK SUPPORT



***11B*-903.6 Structural strength.** *Benches shall be affixed to the wall or floor.* Allowable stresses shall not be exceeded for materials used when a vertical or horizontal force of 250 pounds (1112 N) is applied at any point on the seat, fastener, mounting device or supporting structure.

***11B*-903.7 Wet locations.** Where installed in wet locations, the surface of the seat shall be slip resistant and shall not accumulate water.

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SECTION 11B-904—CHECK-OUT AISLES AND SALES AND SERVICE COUNTERS

***11B*-904.1 General.** Check-out aisles and sales and service counters shall comply with the applicable requirements of *Section 11B*-904.

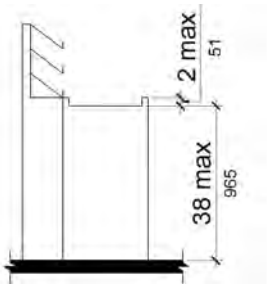
***11B*-904.2 Approach.** All portions of counters required to comply with *Section 11B*-904 shall be located adjacent to a walking surface complying with *Section 11B*-403.

***11B*-904.3 Check-out aisles.** Check-out aisles shall comply with *Section 11B*-904.3.

***11B*-904.3.1 Aisle.** Aisles shall comply with *Section 11B*-403.

***11B*-904.3.2 Counter.** The counter surface height shall be 38 inches (965 mm) maximum above the finish floor or ground. The top of the counter edge protection shall be 2 inches (51 mm) maximum above the top of the counter surface on the aisle side of the check-out counter.

FIGURE *11B*-904.3.2—CHECK-OUT AISLE COUNTERS



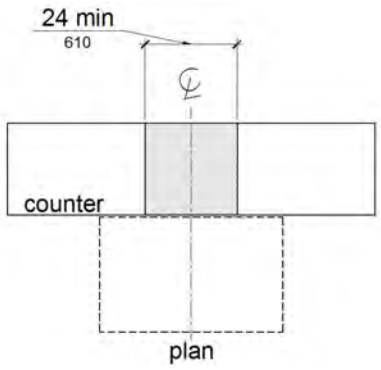
***11B*-904.3.3 Check writing surfaces.** Where provided, check writing surfaces shall comply with *Section 11B*-902.3.

11B-904.3.4 Identification sign. *When not all check-out aisles are accessible, accessible check-out aisles shall be identified by a sign clearly visible to a person in a wheelchair displaying the International Symbol of Accessibility complying with Section 11B-703.7.2.1. The sign shall be a minimum of 4 inches by 4 inches (102 mm by 102 mm).*

***11B*-904.4 Sales and service counters.** Sales counters and service counters shall comply with *Section 11B*-904.4.1 or *11B*-904.4.2. The accessible portion of the countertop shall extend the same depth as the sales or service countertop.

Exception: In alterations, when the provision of a counter complying with *Section 11B*-904.4 would result in a reduction of the number of existing counters at work stations or a reduction of the number of existing mail boxes, the counter shall be permitted to have a portion which is 24 inches (610 mm) long minimum complying with *Section 11B*-904.4.1 provided that the required clear floor or ground space is centered on the accessible length of the counter.

FIGURE *11B*-904.4 (EXCEPTION)—ALTERATION OF SALES AND SERVICE COUNTERS



***11B*-904.4.1 Parallel approach.** A portion of the counter surface that is 36 inches (*914* mm) long minimum and *34* inches (*864* mm) high maximum above the finish floor shall be provided. A clear floor or ground space complying with *Section 11B*-305 shall be positioned for a parallel approach adjacent to the 36 inch (*914* mm) minimum length of counter.

Exception: Where the provided counter surface is less than 36 inches (*914* mm) long, the entire counter surface shall be *34* inches (*864* mm) high maximum above the finish floor.

***11B*-904.4.2 Forward approach.** A portion of the counter surface that is *36* inches (*914* mm) long minimum and *34* inches (*864* mm) high maximum shall be provided. Knee and toe space complying with *Section 11B*-306 shall be provided under the counter. A clear floor or ground space complying with *Section 11B*-305 shall be positioned for a forward approach to the counter.

***11B*-904.5 Food service lines.** Counters in food service lines shall comply with *Section 11B*-904.5.

***11B*-904.5.1 Self-service shelves and dispensing devices.** Self-service shelves and dispensing devices for tableware, dishware, condiments, food and beverages shall comply with *Section 11B*-308.

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***11B*-904.5.2 Tray slides.** The tops of tray slides shall be 28 inches (*711* mm) minimum and 34 inches (*864* mm) maximum above the finish floor or ground.

***11B*-904.6 Security glazing.** Where counters or teller windows have security glazing to separate personnel from the public, a method to facilitate voice communication shall be provided. Telephone handset devices, if provided, shall comply with *Section 11B*-704.3.

DIVISION 10: RECREATION FACILITIES

SECTION 11B-1001—GENERAL

***11B*-1001.1 Scope.** The provisions of *Division* 10 shall apply where required by *Division* 2 or where referenced by a requirement in this *chapter.*

SECTION 11B-1002—AMUSEMENT RIDES

***11B*-1002.1 General.** Amusement rides shall comply with *Section 11B*-1002*.*

***11B*-1002.2 Accessible routes.** Accessible routes serving amusement rides shall comply with *Division* 4*.*

Exceptions:

1. In load or unload areas and on amusement rides, where compliance with *Section 11B*-405.2 is not structurally or operationally feasible, ramp slope shall be permitted to be 1:8 maximum.
2. In load or unload areas and on amusement rides, handrails provided along walking surfaces complying with *Section 11B*-403 and required on ramps complying with *Section 11B*-405 shall not be required to comply with *Section 11B*-505 where compliance is not structurally or operationally feasible.

***11B*-1002.3 Load and unload areas.** A turning space complying with *Sections 11B*-304.2 and *11B*-304.3 shall be provided in load and unload areas.

***11B*-1002.4 Wheelchair spaces in amusement rides.** Wheelchair spaces in amusement rides shall comply with *Section 11B*-1002.4.

***11B*-1002.4.1 Floor or ground surface.** The floor or ground surface of wheelchair spaces shall be stable and firm.

***11B*-1002.4.2 Slope.** The floor or ground surface of wheelchair spaces shall have a slope not steeper than 1:48 when in the load and unload position.

***11B*-1002.4.3 Gaps.** Floors of amusement rides with wheelchair spaces and floors of load and unload areas shall be coordinated so that, when amusement rides are at rest in the load and unload position, the vertical difference between the floors shall be within plus or minus $^{5}/_{8}$ inches (*15.9* mm) and the horizontal gap shall be 3 inches (*76* mm) maximum under normal passenger load conditions.

Exception: Where compliance is not operationally or structurally feasible, ramps, bridge plates or similar devices complying with the applicable requirements of 36 CFR 1192.83(c) shall be provided.

***11B*-1002.4.4 Clearances.** Clearances for wheelchair spaces shall comply with *Section 11B*-1002.4.4.

Exceptions:

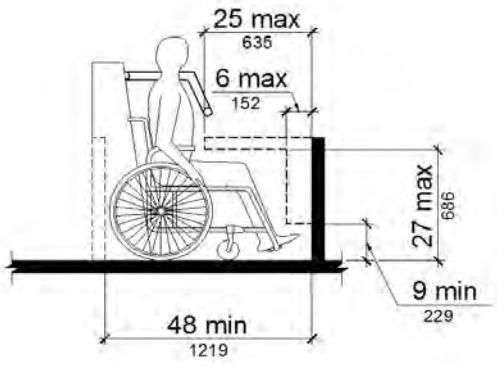
1. Where provided, securement devices shall be permitted to overlap required clearances.
2. Wheelchair spaces shall be permitted to be mechanically or manually repositioned.
3. Wheelchair spaces shall not be required to comply with *Section 11B*-307.4.

***11B*-1002.4.4.1 Width and length.** Wheelchair spaces shall provide a clear width of 30 inches (*762* mm) minimum and a clear length of 48 inches (*1219* mm) minimum measured to 9 inches (*229* mm) minimum above the floor surface.

***11B*-1002.4.4.2 Side entry.** Where wheelchair spaces are entered only from the side, amusement rides shall be designed to permit sufficient maneuvering clearance for individuals using a wheelchair or mobility aid to enter and exit the ride.

***11B*-1002.4.4.3 Permitted protrusions in wheelchair spaces.** Objects are permitted to protrude a distance of 6 inches (*152* mm) maximum along the front of the wheelchair space, where located 9 inches (*229* mm) minimum and 27 inches (*686* mm) maximum above the floor or ground surface of the wheelchair space. Objects are permitted to protrude a distance of 25 inches (635 mm) maximum along the front of the wheelchair space, where located more than 27 inches (*686* mm) above the floor or ground surface of the wheelchair space.

FIGURE *11B*-1002.4.4.3—PROTRUSIONS IN WHEELCHAIR SPACES IN AMUSEMENT RIDES



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***11B*-1002.4.5 Ride entry.** Openings providing entry to wheelchair spaces on amusement rides shall be 32 inches (*813* mm) minimum clear.

***11B*-1002.4.6 Approach.** One side of the wheelchair space shall adjoin an accessible route when in the load and unload position.

***11B*-1002.4.7 Companion seats.** Where the interior width of the amusement ride is greater than 53 inches (*1346* mm), seating is provided for more than one rider, and the wheelchair is not required to be centered within the amusement ride, a companion seat shall be provided for each wheelchair space.

***11B*-1002.4.7.1 Shoulder-to-shoulder seating.** Where an amusement ride provides shoulder-to-shoulder seating, companion seats shall be shoulder-to-shoulder with the adjacent wheelchair space.

Exception: Where shoulder-to-shoulder companion seating is not operationally or structurally feasible, compliance with this requirement shall be required to the maximum extent practicable.

***11B*-1002.5 Amusement ride seats designed for transfer.** Amusement ride seats designed for transfer shall comply with *Section 11B*-1002.5 when positioned for loading and unloading.

***11B*-1002.5.1 Clear floor or ground space.** A clear floor or ground space complying with *Section 11B*-305 shall be provided in the load and unload area adjacent to the amusement ride seats designed for transfer.

***11B*-1002.5.2 Transfer height.** The height of amusement ride seats designed for transfer shall be 14 inches (*356* mm) minimum and 24 inches (610 mm) maximum measured from the surface of the load and unload area.

***11B*-1002.5.3 Transfer entry.** Where openings are provided for transfer to amusement ride seats, the openings shall provide clearance for transfer from a wheelchair or mobility aid to the amusement ride seat.

***11B*-1002.5.4 Wheelchair storage space.** Wheelchair storage spaces complying with *Section 11B*-305 shall be provided in or adjacent to unload areas for each required amusement ride seat designed for transfer and shall not overlap any required means of egress or accessible route.

***11B*-1002.6 Transfer devices for use with amusement rides.** Transfer devices for use with amusement rides shall comply with *Section 11B*-1002.6 when positioned for loading and unloading.

***11B*-1002.6.1 Clear floor or ground space.** A clear floor or ground space complying with *Section 11B*-305 shall be provided in the load and unload area adjacent to the transfer device.

***11B*-1002.6.2 Transfer height.** The height of transfer device seats shall be 14 inches (*356* mm) minimum and 24 inches (610 mm) maximum measured from the load and unload surface.

***11B*-1002.6.3 Wheelchair storage space.** Wheelchair storage spaces complying with *Section 11B*-305 shall be provided in or adjacent to unload areas for each required transfer device and shall not overlap any required means of egress or accessible route.

SECTION 11B-1003—RECREATIONAL BOATING FACILITIES

***11B*-1003.1 General.** Recreational boating facilities shall comply with *Section 11B*-1003.

***11B*-1003.2 Accessible routes.** Accessible routes serving recreational boating facilities, including gangways and floating piers, shall comply with *Division* 4 except as modified by the exceptions in *Section 11B*-1003.2.

***11B*-1003.2.1 Boat slips.** Accessible routes serving boat slips shall be permitted to use the exceptions in *Section 11B*-1003.2.1.

Exceptions:

1. Where an existing gangway or series of gangways is replaced or altered, an increase in the length of the gangway shall not be required to comply with *Section 11B*-1003.2 unless required by *Section 11B*-202.4.
2. Gangways shall not be required to comply with the maximum rise specified in *Section 11B*-405.6.
3. Where the total length of a gangway or series of gangways serving as part of a required accessible route is 80 feet (*24384 mm*) minimum, gangways shall not be required to comply with *Section 11B*-405.2.
4. Where facilities contain fewer than 25 boat slips and the total length of the gangway or series of gangways serving as part of a required accessible route is 30 feet (*9144* mm) minimum, gangways shall not be required to comply with *Section 11B*-405.2.
5. Where gangways connect to transition plates, landings specified by *Section 11B*-405.7 shall not be required.
6. Where gangways and transition plates connect and are required to have handrails, handrail extensions shall not be required. Where handrail extensions are provided on gangways or transition plates, the handrail extensions shall not be required to be parallel with the ground or floor surface.
7. The cross slope specified in *Sections 11B*-403.3 and *11B*-405.3 for gangways, transition plates and floating piers that are part of accessible routes shall be measured in the static position.
8. Changes in level complying with *Sections 11B*-303.3 and *11B*-303.4 shall be permitted on the surfaces of gangways and boat launch ramps.

***11B*-1003.2.2 Boarding piers at boat launch ramps.** Accessible routes serving boarding piers at boat launch ramps shall be permitted to use the exceptions in *Section 11B*-1003.2.2.

Exceptions:

1. Accessible routes serving floating boarding piers shall be permitted to use Exceptions 1, 2, 5, 6, 7 and 8 in *Section 11B*-1003.2.1.
2. Where the total length of the gangway or series of gangways serving as part of a required accessible route is 30 feet (*9144* mm) minimum, gangways shall not be required to comply with *Section 11B*-405.2.
3. Where the accessible route serving a floating boarding pier or skid pier is located within a boat launch ramp, the portion of the accessible route located within the boat launch ramp shall not be required to comply with *Section 11B*-405.

***11B*-1003.3 Clearances.** Clearances at boat slips and on boarding piers at boat launch ramps shall comply with *Section 11B*-1003.3.

***11B*-1003.3.1 Boat slip clearance.** Boat slips shall provide clear pier space 60 inches (*1524* mm) wide minimum and at least as long as the boat slips. Each 10 feet (*3048* mm) maximum of linear pier edge serving boat slips shall contain at least one continuous clear opening 60 inches (*1524* mm) wide minimum.

Exceptions:

1. Clear pier space shall be permitted to be 36 inches (*914* mm) wide minimum for a length of 24 inches (610 mm) maximum, provided that multiple 36 inch (*914* mm) wide segments are separated by segments that are 60 inches (*1524* mm) wide minimum and 60 inches (*1524* mm) long minimum.
2. Edge protection shall be permitted at the continuous clear openings, provided that it is 4 inches (*102* mm) high maximum and 2 inches (51 mm) wide maximum.
3. In existing piers, clear pier space shall be permitted to be located perpendicular to the boat slip and shall extend the width of the boat slip, where the facility has at least one boat slip complying with *Section 11B*-1003.3, and further compliance with *Section 11B*-1003.3 would result in a reduction in the number of boat slips available or result in a reduction of the widths of existing slips.

FIGURE *11B*-1003.3.1—BOAT SLIP CLEARANCE

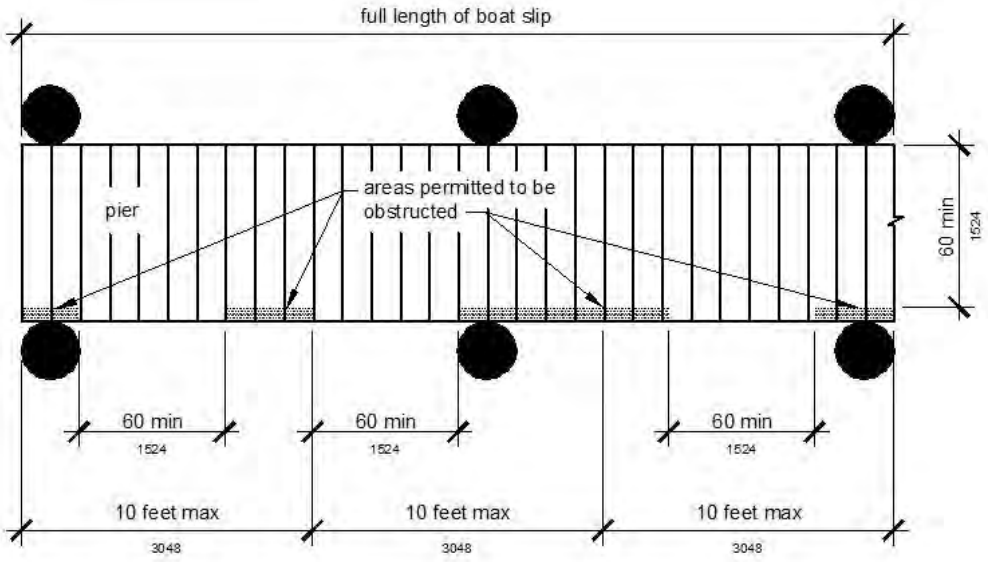

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FIGURE *11B*-1003.3.1 (EXCEPTION 1)—CLEAR PIER SPACE REDUCTION AT BOAT SLIPS

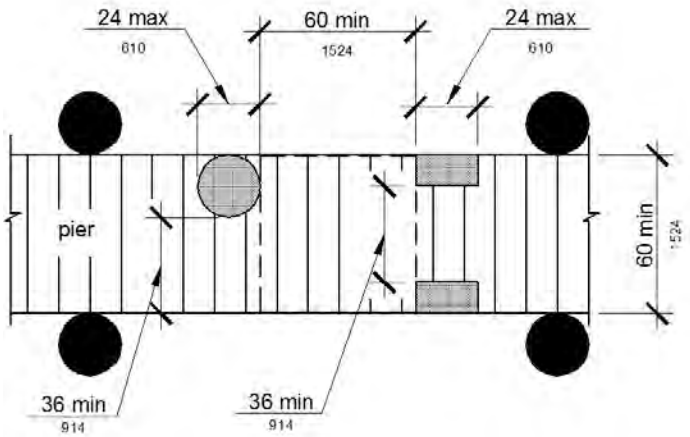
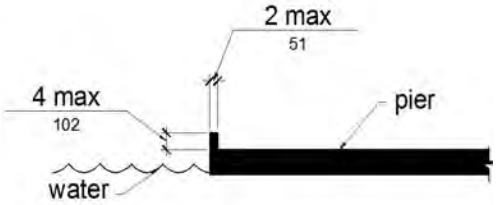


FIGURE *11B*-1003.3.1 (EXCEPTION 2)—EDGE PROTECTION AT BOAT SLIPS



***11B*-1003.3.2 Boarding pier clearances.** Boarding piers at boat launch ramps shall provide clear pier space 60 inches (*1524* mm) wide minimum and shall extend the full length of the boarding pier. Every 10 feet (*3048* mm) maximum of linear pier edge shall contain at least one continuous clear opening 60 inches (*1524* mm) wide minimum.

Exceptions:

1. The clear pier space shall be permitted to be 36 inches (*914* mm) wide minimum for a length of 24 inches (610 mm) maximum provided that multiple 36 inch (*914* mm) wide segments are separated by segments that are 60 inches (*1524* mm) wide minimum and 60 inches (*1524* mm) long minimum.
2. Edge protection shall be permitted at the continuous clear openings provided that it is 4 inches (*102* mm) high maximum and 2 inches (51 mm) wide maximum.

FIGURE *11B*-1003.3.2—BOARDING PIER CLEARANCE

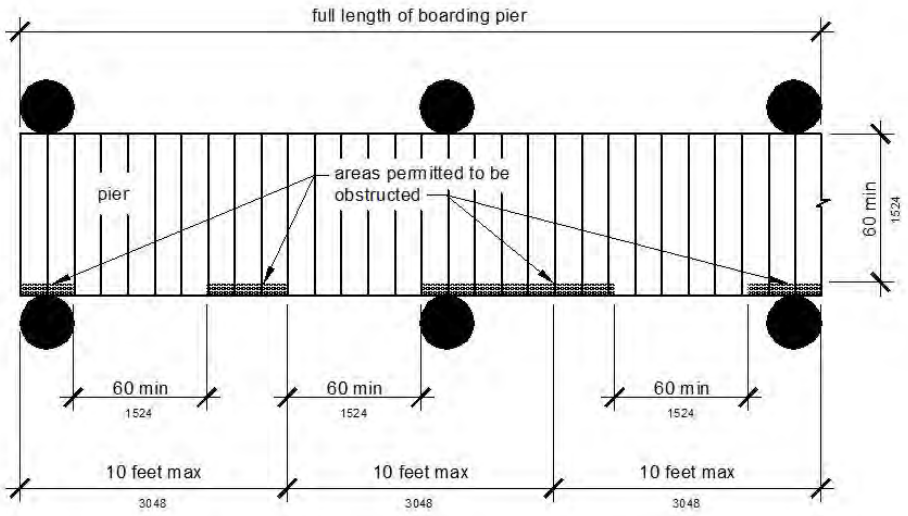


FIGURE *11B*-1003.3.2 (EXCEPTION 1)—CLEAR PIER SPACE REDUCTION AT BOARDING PIERS

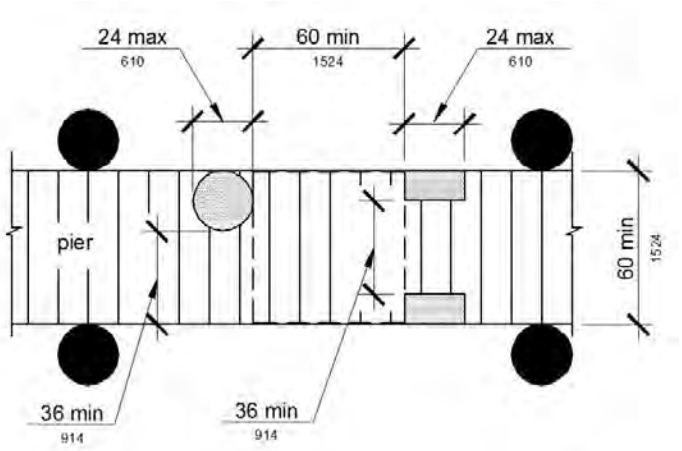
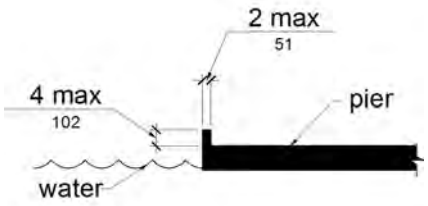


FIGURE *11B*-1003.3.2 (EXCEPTION 2)—EDGE PROTECTION AT BOARDING PIERS



SECTION 11B-1004—EXERCISE MACHINES AND EQUIPMENT

***11B*-1004.1 Clear floor space.** Exercise machines and equipment shall have a clear floor space complying with *Section 11B*-305 positioned for transfer or for use by an individual seated in a wheelchair. Clear floor or ground spaces required at exercise machines and equipment shall be permitted to overlap.

SECTION 11B-1005—FISHING PIERS AND PLATFORMS

***11B*-1005.1 Accessible routes.** Accessible routes serving fishing piers and platforms, including gangways and floating piers, shall comply with *Division* 4.

Exceptions:

1. Accessible routes serving floating fishing piers and platforms shall be permitted to use Exceptions 1, 2, 5, 6, 7 and 8 in *Section 11B*-1003.2.1.
2. Where the total length of the gangway or series of gangways serving as part of a required accessible route is 30 feet (*9144* mm) minimum, gangways shall not be required to comply with *Section 11B*-405.2.

***11B*-1005.2 Railings.** Where provided, railings, guards or handrails shall comply with *Section 11B*-1005.2.

***11B*-1005.2.1 Height.** At least 25 percent of the railings, guards or handrails shall be 34 inches (*864* mm) maximum above the ground or deck surface.

Exception: Where a guard complying with *Chapter 10, Sections 1015.2 through 1015.4* is provided, the guard shall not be required to comply with *Section 11B*-1005.2.1.

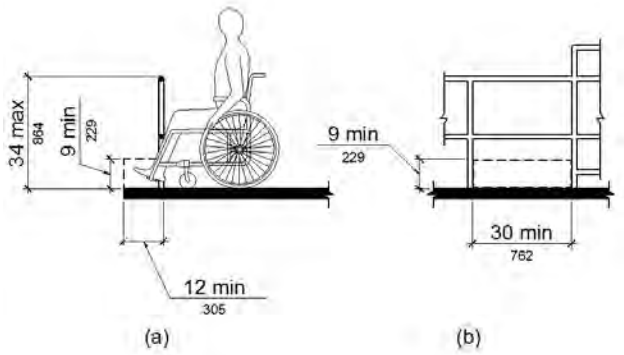
***11B*-1005.2.1.1 Dispersion.** Railings, guards or handrails required to comply with *Section 11B*-1005.2.1 shall be dispersed throughout the fishing pier or platform.

***11B*-1005.3 Edge protection.** Where railings, guards or handrails complying with *Section 11B*-1005.2 are provided, edge protection complying with *Section 11B*-1005.3.1 or *11B*-1005.3.2 shall be provided.

***11B*-1005.3.1 Curb or barrier.** Curbs or barriers shall extend 2 inches (51 mm) minimum above the surface of the fishing pier or platform.

***11B*-1005.3.2 Extended ground or deck surface.** The ground or deck surface shall extend 12 inches (305 mm) minimum beyond the inside face of the railing. Toe clearance shall be provided and shall be 30 inches (*762* mm) wide minimum and 9 inches (*229* mm) minimum above the ground or deck surface beyond the railing.

FIGURE *11B*-1005.3.2—EXTENDED GROUND OR DECK SURFACE AT FISHING PIERS AND PLATFORMS



***11B*-1005.4 Clear floor or ground space.** At each location where there are railings, guards or handrails complying with *Section 11B*-1005.2.1, a clear floor or ground space complying with *Section 11B*-305 shall be provided. Where there are no railings, guards or handrails, at least one clear floor or ground space complying with *Section 11B*-305 shall be provided on the fishing pier or platform.

***11B*-1005.5 Turning space.** At least one turning space complying with *Section 11B*-304.3 shall be provided on fishing piers and platforms.

SECTION 11B-1006—GOLF FACILITIES

***11B*-1006.1 General.** Golf facilities shall comply with *Section 11B*-1006.

***11B*-1006.2 Accessible routes.** Accessible routes serving teeing grounds, practice teeing grounds, putting greens, practice putting greens, teeing stations at driving ranges, course weather shelters, golf car rental areas, bag drop areas and course toilet rooms shall comply with *Division* 4 and shall be 48 inches (*1219* mm) wide minimum. Where handrails are provided, accessible routes shall be 60 inches (*1524* mm) wide minimum.

Exception: Handrails shall not be required on golf courses. Where handrails are provided on golf courses, the handrails shall not be required to comply with *Section 11B*-505.

***11B*-1006.3 Golf car passages.** Golf car passages shall comply with *Section 11B*-1006.3.

***11B*-1006.3.1 Clear width.** The clear width of golf car passages shall be 48 inches (*1219* mm) minimum.

***11B*-1006.3.2 Barriers.** Where curbs or other constructed barriers prevent golf cars from entering a fairway, openings 60 inches (*1524* mm) wide minimum shall be provided at intervals not to exceed 75 yards (69 m).

***11B*-1006.4 Weather shelters.** A clear floor or ground space 60 inches (*1524* mm) minimum by 96 inches (*2438* mm) minimum shall be provided within weather shelters.

SECTION 11B-1007—MINIATURE GOLF FACILITIES

***11B*-1007.1 General.** Miniature golf facilities shall comply with *Section 11B*-1007.

***11B*-1007.2 Accessible routes.** Accessible routes serving holes on miniature golf courses shall comply with *Division* 4. Accessible routes located on playing surfaces of miniature golf holes shall be permitted to use the exceptions in *Section 11B*-1007.2.

Exceptions:

1. Playing surfaces shall not be required to comply with *Section 11B*-302.2.
2. Where accessible routes intersect playing surfaces of holes, a 1 inch (25 mm) maximum curb shall be permitted for a width of 32 inches (*813* mm) minimum.
3. A slope not steeper than 1:4 for a 4 inch (*102* mm) maximum rise shall be permitted.
4. Ramp landing slopes specified by *Section 11B*-405.7.1 shall be permitted to be 1:20 maximum.
5. Ramp landing length specified by *Section 11B*-405.7.3 shall be permitted to be 48 inches (*1219* mm) long minimum.
6. Ramp landing size specified by *Section 11B*-405.7.4 shall be permitted to be 48 inches (*1219* mm) minimum by 60 inches (*1524* mm) minimum.
7. Handrails shall not be required on holes. Where handrails are provided on holes, the handrails shall not be required to comply with *Section 11B*-505.

***11B*-1007.3 Miniature golf holes.** Miniature golf holes shall comply with *Section 11B*-1007.3.

***11B*-1007.3.1 Start of play.** A clear floor or ground space 48 inches (*1219* mm) minimum by 60 inches (*1524* mm) minimum with slopes not steeper than 1:48 shall be provided at the start of play.

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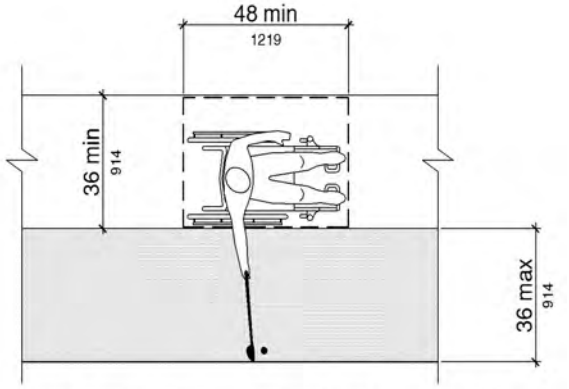
***11B*-1007.3.2 Golf club reach range area.** All areas within holes where golf balls rest shall be within 36 inches (*914* mm) maximum of a clear floor or ground space 36 inches (*914* mm) wide minimum and 48 inches (*1219* mm) long minimum having a running slope not steeper than 1:20. The clear floor or ground space shall be served by an accessible route.

FIGURE *11B*-1007.3.2—GOLF CLUB REACH RANGE AREA



SECTION 11B-1008—PLAY AREAS

***11B*-1008.1 General.** Play areas shall comply with *Section 11B*-1008.

***11B*-1008.2 Accessible routes.** Accessible routes serving play areas shall comply with *Division* 4 and *Section 11B*-1008.2 and shall be permitted to use the exceptions in *Sections 11B*-1008.2.1 through *11B*-1008.2.3. Where accessible routes serve ground level play components, the vertical clearance shall be 80 inches high (*2032* mm) minimum.

***11B*-1008.2.1 Ground level and elevated play components.** Accessible routes serving ground level play components and elevated play components shall be permitted to use the exceptions in *Section 11B*-1008.2.1.

Exceptions:

1. Transfer systems complying with *Section 11B*-1008.3 shall be permitted to connect elevated play components except where 20 or more elevated play components are provided no more than 25 percent of the elevated play components shall be permitted to be connected by transfer systems.
2. Where transfer systems are provided, an elevated play component shall be permitted to connect to another elevated play component as part of an accessible route.

***11B*-1008.2.2 Soft contained play structures.** Accessible routes serving soft contained play structures shall be permitted to use the exception in *Section 11B*-1008.2.2.

Exception: Transfer systems complying with *Section 11B*-1008.3 shall be permitted to be used as part of an accessible route.

***11B*-1008.2.3 Water play components.** Accessible routes serving water play components shall be permitted to use the exceptions in *Section 11B*-1008.2.3.

Exceptions:

1. Where the surface of the accessible route, clear floor or ground spaces or turning spaces serving water play components is submerged, compliance with *Sections 11B*-302*, 11B*-403.3, *11B*-405.2, *11B*-405.3 and *11B*-1008.2.6 shall not be required.
2. Transfer systems complying with *Section 11B*-1008.3 shall be permitted to connect elevated play components in water.

***11B*-1008.2.4 Clear width.** Accessible routes connecting play components shall provide a clear width complying with *Section 11B*-1008.2.4.

***11B*-1008.2.4.1 Ground level.** At ground level, the clear width of accessible routes shall be 60 inches (*1524* mm) minimum.

Exceptions:

1. In play areas less than 1000 square feet (93 m^2), the clear width of accessible routes shall be permitted to be 44 inches (*1118* mm) minimum, if at least one turning space complying with *Section 11B*-304.3 is provided where the restricted accessible route exceeds 30 feet (*9144* mm) in length.
2. The clear width of accessible routes shall be permitted to be 36 inches (*914* mm) minimum for a distance of 60 inches (*1524* mm) maximum provided that multiple reduced width segments are separated by segments that are 60 inches (*1524* mm) wide minimum and 60 inches (*1524* mm) long minimum.

***11B*-1008.2.4.2 Elevated.** The clear width of accessible routes connecting elevated play components shall be 36 inches (*914* mm) minimum.

Exceptions:

1. The clear width of accessible routes connecting elevated play components shall be permitted to be reduced to 32 inches (*813* mm) minimum for a distance of 24 inches (610 mm) maximum provided that reduced width segments are separated by segments that are 48 inches (*1219* mm) long minimum and 36 inches (*914* mm) wide minimum.
2. The clear width of transfer systems connecting elevated play components shall be permitted to be 24 inches (610 mm) minimum.

***11B*-1008.2.5 Ramps.** Within play areas, ramps connecting ground level play components and ramps connecting elevated play components shall comply with *Section 11B*-1008.2.5.

***11B*-1008.2.5.1 Ground level.** Ramp runs connecting ground level play components shall have a running slope not steeper than 1:16.

***11B*-1008.2.5.2 Elevated.** The rise for any ramp run connecting elevated play components shall be 12 inches (305 mm) maximum.

***11B*-1008.2.5.3 Handrails.** Where required on ramps serving play components, the handrails shall comply with *Section 11B*-505 except as modified by *Section 11B*-1008.2.5.3.

Exceptions:

1. Handrails shall not be required on ramps located within ground level use zones.
2. Handrail extensions shall not be required.

***11B*-1008.2.5.3.1 Handrail gripping surfaces.** Handrail gripping surfaces with a circular cross section shall have an outside diameter of 0.95 inch (24 mm) minimum and 1.55 inches (39 mm) maximum. Where the shape of the gripping surface is non-circular, the handrail shall provide an equivalent gripping surface.

***11B*-1008.2.5.3.2 Handrail height.** The top of handrail gripping surfaces shall be 20 inches (508 mm) minimum and 28 inches (*711* mm) maximum above the ramp surface.

***11B*-1008.2.6 Ground surfaces.** Ground surfaces on accessible routes, clear floor or ground spaces, and turning spaces shall comply with *Section 11B*-1008.2.6.

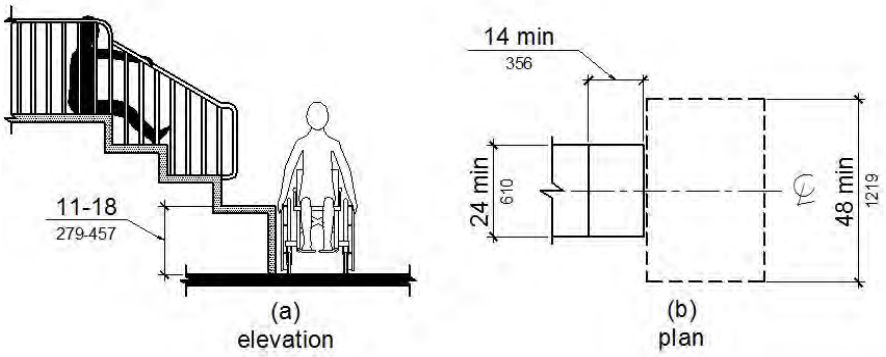
***11B*-1008.2.6.1 Accessibility.** Ground surfaces shall comply with ASTM F1951. Ground surfaces shall be inspected and maintained regularly and frequently to ensure continued compliance with ASTM F1951.

***11B*-1008.2.6.2 Use zones.** Ground surfaces located within use zones shall comply with ASTM F1292 *(1999 edition or 2004 edition).*

***11B*-1008.3 Transfer systems.** Where transfer systems are provided to connect to elevated play components, transfer systems shall comply with *Section 11B*-1008.3.

***11B*-1008.3.1 Transfer platforms.** Transfer platforms shall be provided where transfer is intended from wheelchairs or other mobility aids. Transfer platforms shall comply with *Section 11B*-1008.3.1.

FIGURE *11B*-1008.3.1—TRANSFER PLATFORMS



***11B*-1008.3.1.1 Size.** Transfer platforms shall have level surfaces 14 inches (*356* mm) deep minimum and 24 inches (610 mm) wide minimum.

***11B*-1008.3.1.2 Height.** The height of transfer platforms shall be 11 inches (*279* mm) minimum and 18 inches (*457* mm) maximum measured to the top of the surface from the ground or floor surface.

***11B*-1008.3.1.3 Transfer space.** A transfer space complying with *Sections 11B*-305.2 and *11B*-305.3 shall be provided adjacent to the transfer platform. The 48 inch (*1219* mm) long minimum dimension of the transfer space shall be centered on and paral-

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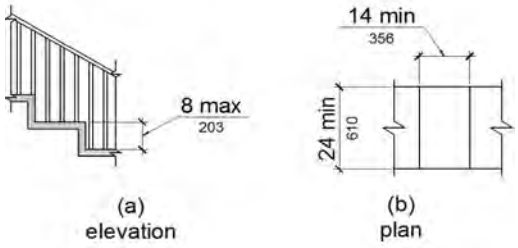
lel to the 24 inch (610 mm) long minimum side of the transfer platform. The side of the transfer platform serving the transfer space shall be unobstructed.

***11B*-1008.3.1.4 Transfer supports.** At least one means of support for transferring shall be provided.

***11B*-1008.3.2 Transfer steps.** Transfer steps shall be provided where movement is intended from transfer platforms to levels with elevated play components required to be on accessible routes. Transfer steps shall comply with *Section 11B*-1008.3.2.

FIGURE *11B*-1008.3.2—TRANSFER STEPS



***11B*-1008.3.2.1 Size.** Transfer steps shall have level surfaces 14 inches (*356* mm) deep minimum and 24 inches (610 mm) wide minimum.

***11B*-1008.3.2.2 Height.** Each transfer step shall be 8 inches (*203* mm) high maximum.

***11B*-1008.3.2.3 Transfer supports.** At least one means of support for transferring shall be provided.

***11B-1008.3.2.4 Contrasting stripe.** Striping complying with Section 11B-504.4.1 shall be provided at each transfer step.*

***11B*-1008.4 Play components.** Ground level play components on accessible routes and elevated play components connected by ramps shall comply with *Section 11B*-1008.4.

***11B*-1008.4.1 Turning space.** At least one turning space complying with *Section 11B*-304 shall be provided on the same level as play components. Where swings are provided, the turning space shall be located immediately adjacent to the swing.

***11B*-1008.4.2 Clear floor or ground space.** Clear floor or ground space complying with *Sections 11B*-305.2 and *11B*-305.3 shall be provided at play components.

***11B*-1008.4.3 Play tables.** Where play tables are provided, knee clearance 24 inches (610 mm) high minimum, 17 inches deep (*432* mm) minimum, and 30 inches (*762* mm) wide minimum shall be provided. The tops of rims, curbs or other obstructions shall be 31 inches (*787* mm) high maximum.

Exception: Play tables designed and constructed primarily for children 5 years and younger shall not be required to provide knee clearance where the clear floor or ground space required by *Section 11B*-1008.4.2 is arranged for a parallel approach.

***11B*-1008.4.4 Entry points and seats.** Where play components require transfer to entry points or seats, the entry points or seats shall be 11 inches (279 mm) minimum and 24 inches (610 mm) maximum from the clear floor or ground space.

Exception: Entry points of slides shall not be required to comply with *Section 11B*-1008.4.4.

***11B*-1008.4.5 Transfer supports.** Where play components require transfer to entry points or seats, at least one means of support for transferring shall be provided.

SECTION 11B-1009—SWIMMING POOLS, WADING POOLS AND SPAS

***11B*-1009.1 General.** Where provided, pool lifts, sloped entries, transfer walls, transfer systems and pool stairs shall comply with *Section 11B*-1009.

***11B*-1009.2 Pool lifts.** Pool lifts shall comply with *Section 11B*-1009.2.

***11B*-1009.2.1 Pool lift location.** Pool lifts shall be located where the water level *is 36 inches (914 mm) minimum and 48 inches (1219 mm) maximum.*

Exceptions:

1. Where the entire pool depth is *less than 36 inches (914 mm) or* greater than 48 inches (*1219* mm), compliance with *Section 11B*-1009.2.1 shall not be required.
2. Where multiple pool lift locations are provided, no more than one pool lift shall be required to be located in an area where the water level is 48 inches (*1219* mm) maximum.

***11B*-1009.2.2 Seat location.** In the raised position, the centerline of the seat shall be located over the deck and 16 inches (*406* mm) minimum from the edge of the pool. The deck surface between the centerline of the seat and the pool edge shall have a slope not steeper than 1:48.

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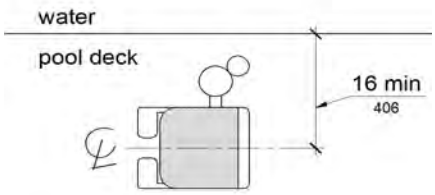
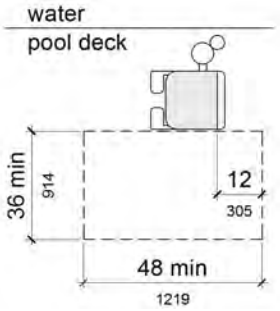
FIGURE *11B*-1009.2.2—POOL LIFT SEAT LOCATION



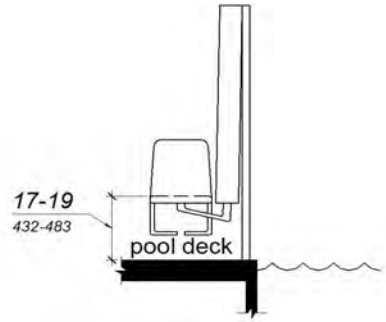
***11B*-1009.2.3 Clear deck space.** On the side of the seat opposite the water, a clear deck space shall be provided parallel with the seat. The space shall be 36 inches (*914* mm) wide minimum and shall extend forward 48 inches (*1219* mm) minimum from a line located 12 inches (305 mm) behind the rear edge of the seat. The clear deck space shall have a slope not steeper than 1:48.

FIGURE *11B*-1009.2.3—CLEAR DECK SPACE AT POOL LIFTS



***11B*-1009.2.4 Seat.** *The seat shall be rigid and shall have a back support that is at least 12 inches (305 mm) tall.* The height of the lift seat shall be designed to allow a stop at *17 inches (432 mm)* minimum to 19 inches (*483* mm) maximum measured from the deck to the top of the seat surface when in the raised (load) position. *The seat shall have a restraint for the use of the occupant with operable parts complying with Section 11B-309.*

FIGURE *11B*-1009.2.4—POOL LIFT SEAT HEIGHT



***11B*-1009.2.5 Seat width.** The seat shall be 16 inches (*406* mm) wide minimum.

***11B*-1009.2.6 Footrests and armrests.** Footrests shall be provided and shall move with the seat. *The seat shall have two armrests. The* armrest positioned opposite the water shall be removable or shall fold clear of the seat when the seat is in the raised (load) position.

Exception: Footrests shall not be required on pool lifts provided in spas.

***11B*-1009.2.7 Operation.** The lift shall be capable of unassisted operation from both the deck and water levels. Controls and operating mechanisms shall be unobstructed when the lift is in use and shall comply with *Section 11B*-309.4. *The lift shall be stable and not permit unintended movement when a person is getting into or out of the seat.*

***11B*-1009.2.8 Submerged depth.** The lift shall be designed so that the seat will submerge to a water depth of 18 inches (*457* mm) minimum below the stationary water level.

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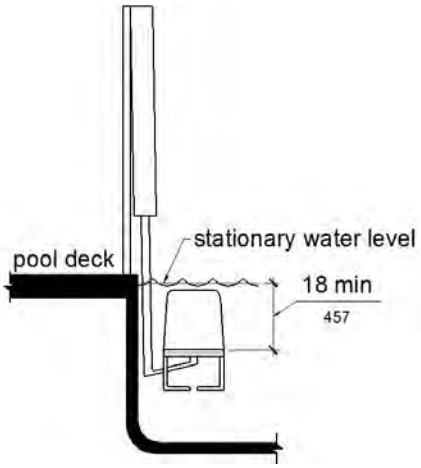
FIGURE *11B*-1009.2.8—POOL LIFT SUBMERGED DEPTH



***11B*-1009.2.9 Lifting capacity.** Single person pool lifts shall have a weight capacity of 300 pounds (136 kg) minimum and be capable of sustaining a static load of at least one and a half times the rated load.

***11B*-1009.3 Sloped entries.** Sloped entries shall comply with *Section 11B*-1009.3.

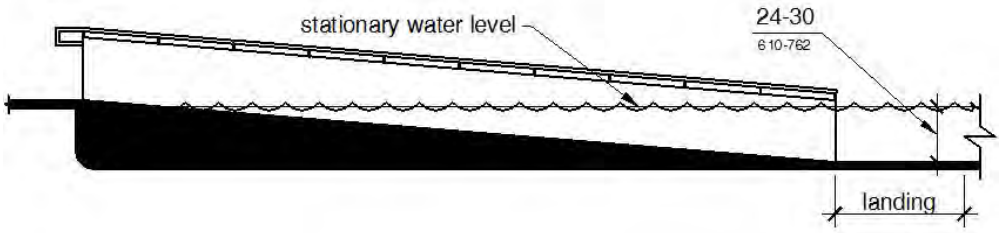
***11B*-1009.3.1 Sloped entries.** Sloped entries shall comply with *Division* 4 except as modified in *Sections 11B-1009.3.1 through 11B-1009.3.3.*

Exception: Where sloped entries are provided, the surfaces shall not be required to be slip resistant.

***11B*-1009.3.2 Submerged depth.** Sloped entries shall extend to a depth of 24 inches (610 mm) minimum and 30 inches (*762* mm) maximum below the stationary water level. Where landings are required by *Section 11B*-405.7, at least one landing shall be located 24 inches (610 mm) minimum and 30 inches (*762* mm) maximum below the stationary water level.

Exception: In wading pools, the sloped entry and landings, if provided, shall extend to the deepest part of the wading pool.

FIGURE *11B*-1009.3.2—SLOPED ENTRY SUBMERGED DEPTH

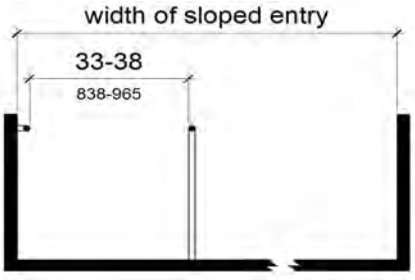


***11B*-1009.3.3 Handrails.** At least two handrails complying with *Section 11B*-505 shall be provided on the sloped entry. The clear width between required handrails shall be 33 inches (*838* mm) minimum and 38 inches (965 mm) maximum.

Exceptions:

1. Handrail extensions specified by *Section 11B*-505.10.1 shall not be required at the bottom landing serving a sloped entry.
2. Where a sloped entry is provided for wave action pools, leisure rivers, sand bottom pools and other pools where user access is limited to one area, the handrails shall not be required to comply with the clear width requirements of *Section 11B*-1009.3.3.
3. Sloped entries in wading pools shall not be required to provide handrails complying with *Section 11B*-1009.3.3. If provided, handrails on sloped entries in wading pools shall not be required to comply with *Section 11B*-505.

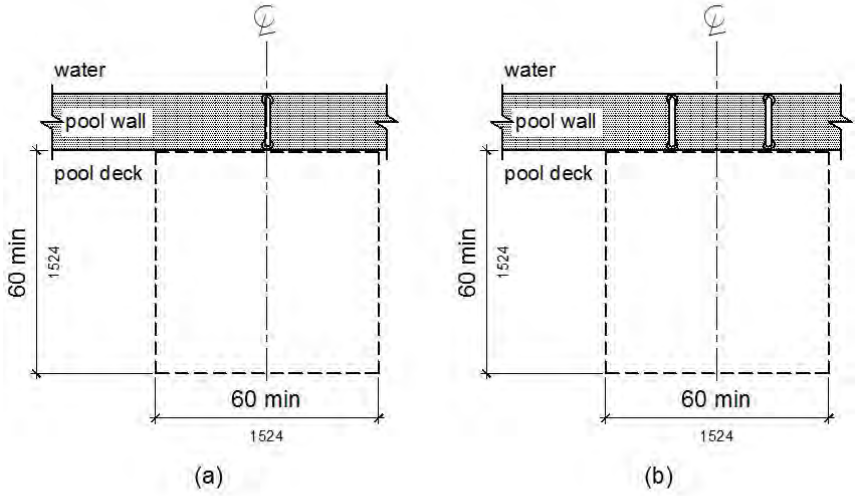
FIGURE *11B*-1009.3.3—HANDRAILS FOR SLOPED ENTRY



***11B*-1009.4 Transfer walls.** Transfer walls shall comply with *Section 11B*-1009.4.

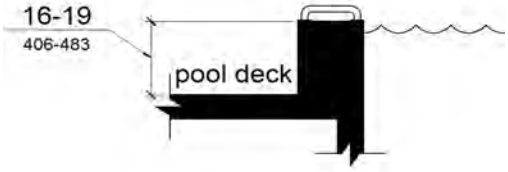
***11B*-1009.4.1 Clear deck space.** A clear deck space of 60 inches (*1524* mm) minimum by 60 inches (*1524* mm) minimum with a slope not steeper than 1:48 shall be provided at the base of the transfer wall. Where one grab bar is provided, the clear deck space shall be centered on the grab bar. Where two grab bars are provided, the clear deck space shall be centered on the clearance between the grab bars.

FIGURE *11B*-1009.4.1—CLEAR DECK SPACE AT TRANSFER WALLS



***11B*-1009.4.2 Height.** The height of the transfer wall shall be 16 inches (*406* mm) minimum and 19 inches (*483* mm) maximum measured from the deck.

FIGURE *11B*-1009.4.2—TRANSFER WALL HEIGHT



***11B*-1009.4.3 Wall depth and length.** The depth of the transfer wall shall be 12 inches (305 mm) minimum and 16 inches (*406* mm) maximum. The length of the transfer wall shall be 60 inches (*1524* mm) minimum and shall be centered on the clear deck space.

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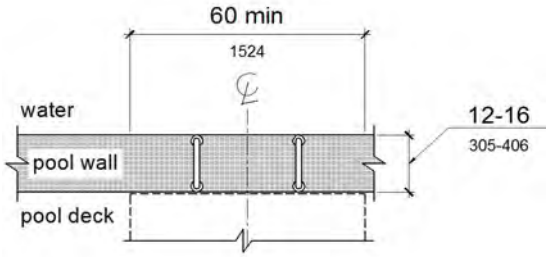
FIGURE *11B*-1009.4.3—DEPTH AND LENGTH OF TRANSFER WALLS

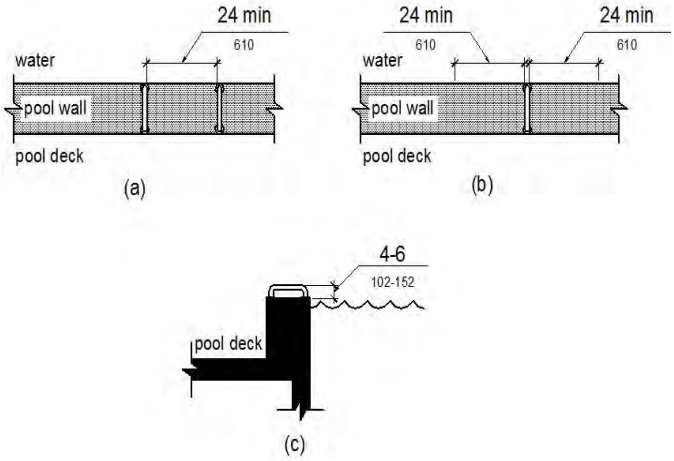


***11B*-1009.4.4 Surface.** Surfaces of transfer walls shall not be sharp and shall have rounded edges.

***11B*-1009.4.5 Grab bars.** At least one grab bar complying with *Section 11B*-609 shall be provided on the transfer wall. Grab bars shall be perpendicular to the pool wall and shall extend the full depth of the transfer wall. The top of the gripping surface shall be 4 inches (*102* mm) minimum and 6 inches (*152* mm) maximum above transfer walls. Where one grab bar is provided, clearance shall be 24 inches (610 mm) minimum on both sides of the grab bar. Where two grab bars are provided, clearance between grab bars shall be 24 inches (610 mm) minimum.

Exception: Grab bars on transfer walls shall not be required to comply with *Section 11B*-609.4.

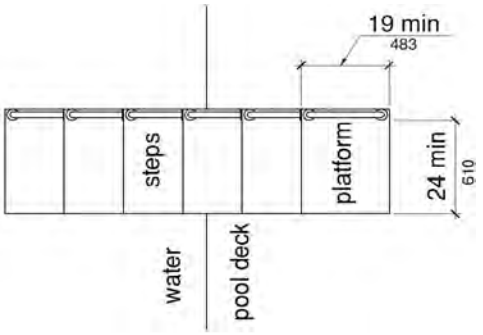
FIGURE *11B*-1009.4.5—GRAB BARS FOR TRANSFER WALLS



***11B*-1009.5 Transfer systems.** Transfer systems shall comply with *Section 11B*-1009.5.

***11B*-1009.5.1 Transfer platform.** A transfer platform shall be provided at the head of each transfer system. Transfer platforms shall provide 19 inches (*483* mm) minimum clear depth and 24 inches (610 mm) minimum clear width.

FIGURE *11B*-1009.5.1—SIZE OF TRANSFER PLATFORM



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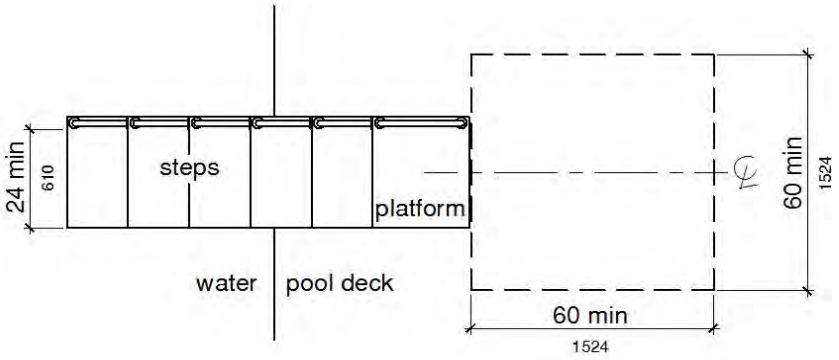
***11B*-1009.5.2 Transfer space.** A transfer space of 60 inches (*1524* mm) minimum by 60 inches (*1524* mm) minimum with a slope not steeper than 1:48 shall be provided at the base of the transfer platform surface and shall be centered along a 24 inch (610 mm) minimum side of the transfer platform. The side of the transfer platform serving the transfer space shall be unobstructed.

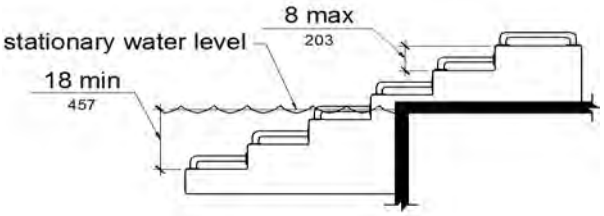
FIGURE *11B*-1009.5.2—CLEAR DECK SPACE AT TRANSFER PLATFORM



***11B*-1009.5.3 Height.** The height of the transfer platform shall comply with *Section 11B*-1009.4.2.

***11B*-1009.5.4 Transfer steps.** Transfer step height shall be 8 inches (*203* mm) maximum. The surface of the bottom tread shall extend to a water depth of 18 inches (*457* mm) minimum below the stationary water level.

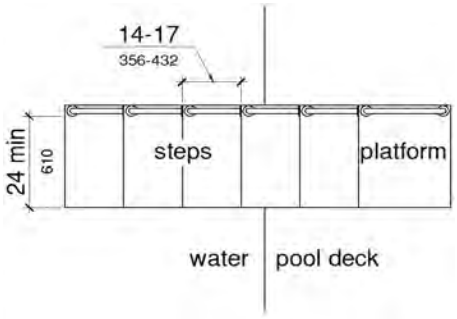
FIGURE *11B*-1009.5.4—TRANSFER STEPS



***11B*-1009.5.5 Surface.** The surface of the transfer system shall not be sharp and shall have rounded edges.

***11B*-1009.5.6 Size.** Each transfer step shall have a tread clear depth of 14 inches (*356* mm) minimum and 17 inches (*432* mm) maximum and shall have a tread clear width of 24 inches (610 mm) minimum.

FIGURE *11B*-1009.5.6—SIZE OF TRANSFER STEPS



***11B*-1009.5.7 Grab bars.** At least one grab bar on each transfer step and the transfer platform or a continuous grab bar serving each transfer step and the transfer platform shall be provided. Where a grab bar is provided on each step, the tops of gripping surfaces shall be 4 inches (*102* mm) minimum and 6 inches (*152* mm) maximum above each step and transfer platform. Where a continuous grab bar is provided, the top of the gripping surface shall be 4 inches (*102* mm) minimum and 6 inches (*152* mm) maximum above the step nosing and transfer platform. Grab bars shall comply with *Section 11B*-609 and be located on at least one side of the transfer system. The grab bar located at the transfer platform shall not obstruct transfer.

Exception: Grab bars on transfer systems shall not be required to comply with *Section 11B*-609.4.

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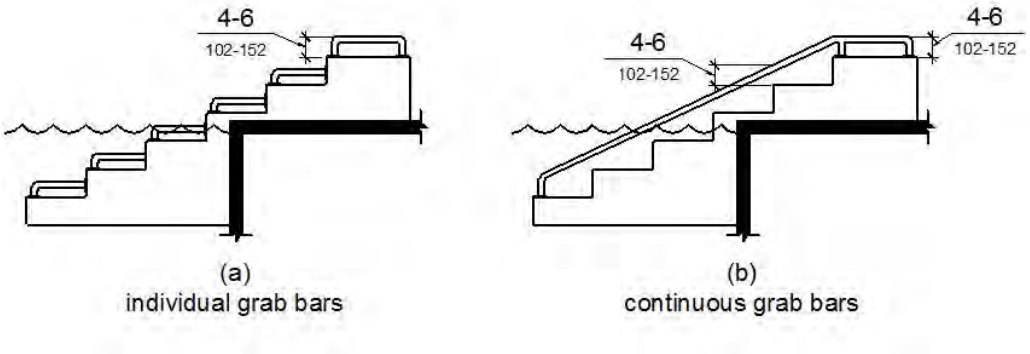
FIGURE *11B*-1009.5.7—GRAB BARS



***11B*-1009.6 Pool stairs.** Pool stairs shall comply with *Section 11B*-1009.6.

***11B*-1009.6.1 Pool stairs.** Pool stairs shall comply with *Section 11B*-504.

Exception: Pool step riser heights shall not be required to be 4 inches (*102* mm) high minimum and 7 inches (*178* mm) high maximum provided that riser heights are uniform.

***11B*-1009.6.2 Handrails.** The width between handrails shall be 20 inches (*508* mm) minimum and 24 inches (610 mm) maximum. Handrail extensions required by *Section 11B*-505.10.3 shall not be required on pool stairs.

SECTION 11B-1010—SHOOTING FACILITIES WITH FIRING POSITIONS

***11B*-1010.1 Turning space.** A circular turning space 60 inches (*1524* mm) diameter minimum with slopes not steeper than 1:48 shall be provided at shooting facilities with firing positions.

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CALIFORNIA BUILDING CODE – MATRIX ADOPTION TABLE
CHAPTER 12 – INTERIOR ENVIRONMENT

(Matrix Adoption Tables are nonregulatory, intended only as an aid to the code user.
See Chapter 1 for state agency authority and building applications.)

Adopting agency	BSC	BSC-CG	SFM	HCD			DSA			OSHPD							BSCC	DPH	AGR	DWR	CEC	CA	SL	SLC
				1	2	1/AC	AC	SS	SS/CC	1	1R	2	3	4	5	6								
Adopt entire chapter								X	X															
Adopt entire chapter as amended (amended sections listed below)	X			X	X					X	X	X	X	X	X	X								
Adopt only those sections that are listed below		X	X														X	X	X			X		
Chapter / Section																								
1202.1				X	X																			
1202.3.1																					X			
1202.4.1.3																						X		
1202.5				X																				
1202.5.2.1				X																				
1202.6			X																					
1203.1				X	X					X	X	X	X	X	X									
Table 1202.3.1																					X			
1204.1				X																				
1204.4.1				X	X																			
1204.6		X																						
1204.7	X																							
1204.7.1	X																							
1205			X																					
1206.3, *Exception*				X	X																			
1206.4				X	X																			
1206.5		X																						
1208.1				X																				
1208.2										X	X	X	X	X	X									
1208.2, Exception 5										X		X	X		X									
1208.2, Exception 6														X										
1208.5				X																				
1209			X																					
1209.1.1																						X		
1210.2										X		X	X	X	X									
1212 – 1212.6				X	X																			
1213 – 1213.1				X																				
Table 1224.4.6.5										X	X	X	X	X	X									
1224										X														
1225												X												
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1231																	X							
1235																		X						
1236																		X						

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CALIFORNIA BUILDING CODE – MATRIX ADOPTION TABLE
CHAPTER 12 – INTERIOR ENVIRONMENT—continued

Adopting agency	BSC	BSC-CG	SFM	HCD			DSA			OSHPD							BSCC	DPH	AGR	DWR	CEC	CA	SL	SLC
				1	2	1/AC	AC	SS	SS/CC	1	1R	2	3	4	5	6								
Adopt entire chapter								X	X															
Adopt entire chapter as amended (amended sections listed below)	X			X	X					X	X	X	X	X	X	X								
Adopt only those sections that are listed below		X	X														X	X	X			X		
Chapter / Section																								
1237																		X						
1240																			X					
1241																			X					
1242																			X					
1243																			X					
1250																						X		
1251																						X		
1252																						X		
1253																						X		
1254																						X		

The state agency does not adopt sections identified by the following symbol: †

The Office of the State Fire Marshal's adoption of this chapter or individual sections is applicable to structures regulated by other state agencies pursuant to Section 1.11.

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CHAPTER

12 INTERIOR ENVIRONMENT

About this chapter: Chapter 12 provides minimum provisions for the interior of buildings—the occupied environment. Ventilation, lighting, and space heating are directly regulated in this chapter and in conjunction with the *California Mechanical Code* and the *California Energy Code*. Minimum room size, maximum room-to-room sound transmission and classroom acoustics are set for educational occupancies.

ICC code development note: Code change proposals to sections preceded by the designation [P] will be considered by a code development committee meting during the 2024 (Group A) Code Development Cycle. All other code change proposals will be considered by a code development committee meeting during the 2025 (Group B) Code Development Cycle.

SECTION 1201—GENERAL

1201.1 Scope. The provisions of this chapter shall govern ventilation, temperature control, lighting, yards and courts, sound transmission, enhanced classroom acoustics, interior space dimensions, access to unoccupied spaces, toilet and bathroom requirements and ultraviolet (UV) germicidal irradiation systems associated with the interior spaces of buildings.

SECTION 1202—VENTILATION

1202.1 General. Buildings shall be provided with natural ventilation in accordance with Section 1202.5, or mechanical ventilation in accordance with the *California Mechanical Code*.

Dwelling units complying with the air leakage requirements of the *California Energy Code* or ASHRAE 90.1 shall be ventilated by mechanical means in accordance with Section 403 of the *California Mechanical Code*. Ambulatory care facilities and Group I-2 occupancies shall be ventilated by mechanical means in accordance with Section 407 of the *California Mechanical Code*.

1202.2 Roof ventilation. Roof assemblies shall be ventilated in accordance with this section or shall comply with Section 1202.3.

1202.2.1 Ventilated attics and rafter spaces. Enclosed attics and enclosed rafter spaces formed where ceilings are applied directly to the underside of roof framing members shall have cross ventilation for each separate space by ventilation openings protected against the entrance of rain and snow. Blocking and bridging shall be arranged so as not to interfere with the movement of air. An airspace of not less than 1 inch (25 mm) shall be provided between the insulation and the roof sheathing. The net free ventilating area shall be not less than $^1/_{150}$ of the area of the space ventilated. Ventilators shall be installed in accordance with manufacturer's installation instructions.

Exception: The net free cross-ventilation area shall be permitted to be reduced to $^1/_{300}$ provided both of the following conditions are met:

1. In Climate Zones 6, 7 and 8, a Class I or II vapor retarder is installed on the warm-in-winter side of the ceiling.
2. At least 40 percent and not more than 50 percent of the required venting area is provided by ventilators located in the upper portion of the attic or rafter space. Upper ventilators shall be located not more than 3 feet (914 mm) below the ridge or highest point of the space, measured vertically, with the balance of the ventilation provided by eave or cornice vents. Where the location of wall or roof framing members conflicts with the installation of upper ventilators, installation more than 3 feet (914 mm) below the ridge or highest point of the space shall be permitted.

1202.2.2 Openings into attic. Exterior openings into the attic space of any building intended for human occupancy shall be protected to prevent the entry of birds, squirrels, rodents, snakes and other similar creatures. Openings for ventilation having a least dimension of not less than $^1/_{16}$ inch (1.6 mm) and not more than $^1/_4$ inch (6.4 mm) shall be permitted. Openings for ventilation having a least dimension larger than $^1/_4$ inch (6.4 mm) shall be provided with corrosion-resistant wire cloth screening, hardware cloth, perforated vinyl or similar material with openings having a least dimension of not less than $^1/_{16}$ inch (1.6 mm) and not more than $^1/_4$ inch (6.4 mm). Where combustion air is obtained from an attic area, it shall be in accordance with Chapter 7 of the *California Mechanical Code*.

1202.3 Unvented attic and unvented enclosed rafter assemblies. Unvented attics and unvented enclosed roof framing assemblies created by ceilings applied directly to the underside of the roof framing members/rafters and the structural roof sheathing at the top of the roof framing members shall be permitted where all of the following conditions are met:

1. The unvented attic space is completely within the building thermal envelope.
2. No interior Class I vapor retarders are installed on the ceiling side (attic floor) of the unvented attic assembly or on the ceiling side of the unvented enclosed roof framing assembly.
3. Where wood shingles or shakes are used, not less than a $^1/_4$-inch (6.4 mm) vented airspace separates the shingles or shakes and the roofing underlayment above the structural sheathing.
4. In Climate Zones 5, 6, 7 and 8, any air-impermeable insulation shall be a Class II vapor retarder or shall have a Class II vapor retarder coating or covering in direct contact with the underside of the insulation.
5. Insulation shall comply with either Item 5.1 or 5.2, and additionally Item 5.3.

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5.1. Item 5.1.1, 5.1.2, 5.1.3 or 5.1.4 shall be met, depending on the air permeability of the insulation directly under the structural roof sheathing.

5.1.1. Where only air-impermeable insulation is provided, it shall be applied in direct contact with the underside of the structural roof sheathing.

5.1.2. Where air-permeable insulation is provided inside the building thermal envelope, it shall be installed in accordance with Item 5.1.1. In addition to the air-permeable insulation installed directly below the structural sheathing, rigid board or sheet insulation shall be installed directly above the structural roof sheathing in accordance with the *R*-value percentages in Table 1202.3 for condensation control.

5.1.3. Where both air-impermeable and air-permeable insulation are provided, the air-impermeable insulation shall be applied in direct contact with the underside of the structural roof sheathing in accordance with Item 5.1.1 and shall be in accordance with the *R*-value percentages in Table 1202.3 for condensation control. The air-permeable insulation shall be installed directly under the air-impermeable insulation.

5.1.4. Alternatively, sufficient rigid board or sheet insulation shall be installed directly above the structural roof sheathing to maintain the monthly average temperature of the underside of the structural roof sheathing above 45°F (7°C). For calculation purposes, an interior air temperature of 68°F (20°C) is assumed and the exterior air temperature is assumed to be the monthly average outside air temperature of the three coldest months.

5.2. In Climate Zones 1, 2 and 3, air-permeable insulation installed in unvented attics shall meet the following requirements:

5.2.1. A vapor diffusion port shall be installed not more than 12 inches (305 mm) from the highest point of the roof, measured vertically from the highest point of the roof to the lower edge of the port.

5.2.2. The port area shall be greater than or equal to $^{1}/_{150}$ of the ceiling area. Where there are multiple ports in the attic, the sum of the port areas shall be greater than or equal to the area requirement.

5.2.3. The vapor permeable membrane in the vapor diffusion port shall have a vapor permeance rating of greater than or equal to 20 perms when tested in accordance with Procedure A of ASTM E96.

5.2.4. The vapor diffusion port shall serve as an air barrier between the attic and the exterior of the building.

5.2.5. The vapor diffusion port shall protect the attic against the entrance of rain and snow.

5.2.6. Framing members and blocking shall not block the free flow of water vapor to the port. Not less than a 2-inch (50 mm) space shall be provided between any blocking and the roof sheathing. Air-permeable insulation shall be permitted within that space.

5.2.7. The roof slope shall be greater than or equal to 3 units vertical in 12 units horizontal (3:12).

5.2.8. Where only air-permeable insulation is used, it shall be installed directly below the structural roof sheathing, on top the attic floor, or on top of the ceiling.

5.2.9. Where only air-permeable insulation is used and is installed directly below the structural roof sheathing, air shall be supplied at a flow rate greater than or equal to 50 cubic feet per minute (23.6 L/s) per 1,000 square feet (93 m^2) of ceiling.

5.3. The air shall be supplied from ductwork providing supply air to the occupiable space when the conditioning system is operating. Alternatively, the air shall be supplied by a supply fan when the conditioning system is operating. Where preformed insulation board is used as the air-impermeable insulation layer, it shall be sealed at the perimeter of each individual sheet interior surface to form a continuous layer.

Exceptions:

1. Section 1202.3 does not apply to special use structures or enclosures such as swimming pool enclosures, data processing centers, hospitals or art galleries.
2. Section 1202.3 does not apply to enclosures in Climate Zones 5 through 8 that are humidified beyond 35 percent during the three coldest months.

TABLE 1202.3—INSULATION FOR CONDENSATION CONTROL

CLIMATE ZONE	MINIMUM R-VALUE OF AIR-IMPERMEABLE INSULATION EXPRESSED AS A PERCENTAGE OF TOTAL R-VALUE[a]
2B and 3B tile roof only	0 (none required)
1, 2A, 2B, 3A, 3B, 3C	10%
4C	20%
4A, 4B	30%
5	40%
6	50%
7	60%
8	70%

a. Contributes to, but does not supersede, thermal resistance requirements for attic and roof assemblies in the *California Energy Code*.

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1202.3.1 California Energy Code and International Energy Conservation Code Climate Zones. *The IECC climate zones used by this section differ from those used by the California Energy Code to determine applicability of energy efficiency measures. Comparison of IECC and California Energy Code climate zones is shown in Table 1202.3.1.*

TABLE 1202.3.1—IECC VERSUS CALIFORNIA ENERGY CODE CLIMATE ZONE COMPARISON

IECC[a]	CALIFORNIA ENERGY CODE	DESCRIPTION[b]
6	16	Includes Alpine, Mono Counties
5	11, 12, 16	Includes Siskiyou, Modoc, Lassen, Plumas, Sierra, Nevada Counties
4 (marine)	1, 2, 16	Includes Del Norte and Humboldt Counties
4	2, 12, 13, 16	Includes Inyo, Trinity, Lake, El Dorado, Amador, Calaveras, Tuolumne, Mariposa Counties
3	8, 9, 10, 11, 12, 13, 14, 15, 16	Includes Shasta, Tehama, Butte, Glenn, Colusa, Yuba, Contra Costa, Sutter, Yolo, Sacramento, Placer, San Joaquin, Solano, Stanislaus, Merced, Madera, Fresno, Kings, Tulare, Kern, Ventura, Los Angeles, Orange, San Bernardino, Riverside Counties
3 (marine)	1, 2, 3, 4, 5, 6, 7, 9, 12, 16	Includes Mendocino, Sonoma, Marin, San Francisco, San Mateo, Alameda, Santa Cruz, Monterey, San Benito, San Luis Obispo, Santa Barbara, Ventura, San Diego Counties
2	14, 16	Includes Imperial County

a. IECC Climate Zones 1, 7 and 8 do not occur in California, nor do any IECC moist climate zones.
b. IECC boundaries are defined by county political boundary lines. California Energy Code boundaries are based on a metes and bounds specifications aligned with climate-affecting geographic features, which often do not coincide with county lines.

1202.4 Under-floor ventilation. The space between the bottom of the floor joists and the earth under any building except spaces occupied by basements or cellars shall be provided with ventilation in accordance with Section 1202.4.1, 1202.4.2 or 1202.4.3.

1202.4.1 Ventilation openings. Ventilation openings through foundation walls shall be provided. The openings shall be placed so as to provide cross ventilation of the under-floor space. The net area of ventilation openings shall be in accordance with Section 1202.4.1.1 or 1202.4.1.2. Ventilation openings shall be covered for their height and width with any of the following materials, provided that the least dimension of the covering shall be not greater than $^1/_4$ inch (6.4 mm):

1. Perforated sheet metal plates not less than 0.070 inch (1.8 mm) thick.
2. Expanded sheet metal plates not less than 0.047 inch (1.2 mm) thick.
3. Cast-iron grilles or gratings.
4. Extruded load-bearing vents.
5. Hardware cloth of 0.035-inch (0.89 mm) wire or heavier.
6. Corrosion-resistant wire mesh, with the least dimension not greater than $^1/_8$ inch (3.2 mm).
7. Operable louvres, where ventilation is provided in accordance with Section 1202.4.1.2.

1202.4.1.1 Ventilation area for crawl spaces with open earth floors. The net area of ventilation openings for crawl spaces with uncovered earth floors shall be not less than 1 square foot for each 150 square feet (0.67 m^2 for each 100 m^2) of crawl space area.

1202.4.1.2 Ventilation area for crawl spaces with covered floors. The net area of ventilation openings for crawl spaces with the ground surface covered with a Class I vapor retarder shall be not less than 1 square foot for each 1,500 square feet (0.67 m^2 for each 1000 m^2) of crawl space area.

1202.4.1.3 [SPCB] *Openings for under-floor ventilation shall be not less than 1 $^1/_2$ square feet (0.135 m^2) for each 25 linear feet (7620 linear mm) of exterior wall. They shall be covered with corrosion-resistant wire mesh with mesh openings not less than $^1/_4$ inch (6.4 mm) nor more than $^1/_2$ inch (13 mm) in any dimension.*

1202.4.2 Ventilation in cold climates. In extremely cold climates, where a ventilation opening will cause a detrimental loss of energy, ventilation openings to the interior of the structure shall be provided.

1202.4.3 Mechanical ventilation. Mechanical ventilation shall be provided to crawl spaces where the ground surface is covered with a Class I vapor retarder. Ventilation shall be in accordance with Section 1202.4.3.1 or 1202.4.3.2.

1202.4.3.1 Continuous mechanical ventilation. Continuously operated mechanical ventilation shall be provided at a rate of 1.0 cubic foot per minute (cfm) for each 50 square feet (1.02 L/s for each 10 m^2) of crawl space ground surface area and the ground surface shall be covered with a Class I vapor retarder.

1202.4.3.2 Conditioned space. The crawl space shall be conditioned in accordance with the *California Mechanical Code* and the walls of the crawl space shall be insulated in accordance with the *California Energy Code*.

1202.4.4 Flood hazard areas. For buildings in flood hazard areas as established in Section 1612.3, the openings for under-floor ventilation shall be deemed as meeting the flood opening requirements of ASCE 24 provided that the ventilation openings are designed and installed in accordance with ASCE 24.

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1202.5 Natural ventilation. Natural ventilation of an occupied space shall be through windows, doors, louvers or other openings to the outdoors. The operating mechanism for such openings shall be provided with ready access so that the openings are readily controllable by the building occupants.

[HCD 1] *In employee housing, all openable windows in rooms used for living, dining, cooking or sleeping purposes, and toilet and bath buildings, shall be provided and maintained with insect screening.*

[HCD 1] *Door openings of rooms used for dining, cooking, toilet and bathing facilities in employee housing shall be provided and maintained with insect screening or with solid doors equipped with self-closing devices in lieu thereof, when approved by the enforcement agency.*

[HCD 1] *The windows, doors, louvers or other approved closeable openings not required by Section 1030 may open into a passive solar energy collector for ventilation required by this section. The area of ventilation openings to the outside of the passive solar energy collector shall be increased to compensate for the openings required by the interior space.*

1202.5.1 Ventilation area required. The openable area of the openings to the outdoors shall be not less than 4 percent of the floor area being ventilated.

1202.5.1.1 Adjoining spaces. Where rooms and spaces without openings to the outdoors are ventilated through an adjoining room, the opening to the adjoining room shall be unobstructed and shall have an area of not less than 8 percent of the floor area of the interior room or space, but not less than 25 square feet (2.3 m^2). The openable area of the openings to the outdoors shall be based on the total floor area being ventilated.

Exception: Exterior openings required for ventilation shall be allowed to open into a sunroom with thermal isolation or a patio cover provided that the openable area between the sunroom addition or patio cover and the interior room shall have an area of not less than 8 percent of the floor area of the interior room or space, but not less than 20 square feet (1.86 m^2). The openable area of the openings to the outdoors shall be based on the total floor area being ventilated.

1202.5.1.2 Openings below grade. Where openings below grade provide required natural ventilation, the outside horizontal clear space measured perpendicular to the opening shall be one and one-half times the depth of the opening. The depth of the opening shall be measured from the average adjoining ground level to the bottom of the opening.

1202.5.2 Contaminants exhausted. Contaminant sources in naturally ventilated spaces shall be removed in accordance with the *California Mechanical Code* and the *California Fire Code*.

1202.5.2.1 Bathrooms. Rooms containing bathtubs, showers, spas and similar bathing fixtures shall be mechanically ventilated in accordance with the *California Mechanical Code*.

The minimum exhaust rate shall not be less than that established by Table 403.7 "Minimum Exhaust Rates." See California Mechanical Code, Chapter 5, for additional provisions related to environmental air ducts.

[HCD 1] *In addition to the requirements in this section and in the California Mechanical Code, bathrooms in Group R occupancies shall be mechanically ventilated in accordance with the California Green Building Standards Code (CALGreen), Chapter 4, Division 4.5.*

1202.5.3 Openings on yards or courts. Where natural ventilation is to be provided by openings onto yards or courts, such yards or courts shall comply with Section 1205.

1202.6 Other ventilation and exhaust systems. Ventilation and exhaust systems for occupancies and operations involving flammable or combustible hazards or other contaminant sources as covered in the *California Mechanical Code* or the *California Fire Code* shall be provided as required by both codes.

SECTION 1203—TEMPERATURE CONTROL

1203.1 Equipment and systems. Interior spaces intended for human occupancy shall be provided with active or passive space heating systems capable of maintaining an indoor temperature of not less than 68°F (20°C) at a point 3 feet (914 mm) above the floor on the design heating day.

Exceptions:

1. Space heating systems are not required for:
   - 1.1. Interior spaces where the primary purpose of the space is not associated with human comfort.
   - 1.2. Group F, H, S or U occupancies.
2. ***[HCD 1]*** *For limited-density owner-built rural dwellings, a heating facility or appliance shall be installed in each dwelling subject to the provisions of Subchapter 1, Chapter 1, Title 25, California Code of Regulations, commencing with Section 74; however, there shall be no specified requirement for heating capacity or temperature maintenance. The use of solid-fuel or solar-heating devices shall be deemed as complying with the requirements of this section. If nonrenewable fuel is used in these dwellings, rooms so heated shall meet current installation standards.*
3. ***[OSHPD 1, 1R, 2, 3, 4 & 5]*** *Space heating systems shall comply with the requirements of the California Mechanical Code.*
4. ***[HCD 1]*** *When a passive solar energy collector is designed as a conditioned area it shall comply with the California Energy Code. Nonconditioned passive solar energy collectors are exempt from compliance with the California Energy Code.*

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SECTION 1204—LIGHTING

1204.1 General. Every space intended for human occupancy shall be provided with natural light by means of exterior glazed openings in accordance with Section 1204.2 or shall be provided with artificial light in accordance with Section 1204.3. Exterior glazed openings shall open directly onto a public way or onto a yard or court in accordance with Section 1205.

[HCD 1] *Glazed openings may open into a passive solar energy collector provided the area of exterior glazed openings in the passive solar energy collector is increased to compensate for the area required by the interior space.*

1204.2 Natural light. The minimum net glazed area shall be not less than 8 percent of the floor area of the room served.

1204.2.1 Adjoining spaces. For the purpose of natural lighting, any room is permitted to be considered as a portion of an adjoining room where one-half of the area of the common wall is open and unobstructed and provides an opening of not less than one-tenth of the floor area of the interior room or 25 square feet (2.32 m^2), whichever is greater.

Exception: Openings required for natural light shall be permitted to open into a sunroom with thermal isolation or a patio cover where the common wall provides a glazed area of not less than one-tenth of the floor area of the interior room or 20 square feet (1.86 m^2), whichever is greater.

1204.2.2 Exterior openings. Exterior openings required by Section 1204.2 for natural light shall open directly onto a public way, yard or court, as set forth in Section 1205.

Exceptions:

1. Required exterior openings are permitted to open into a roofed porch where the porch meets all of the following criteria:
   - 1.1. Abuts a public way, yard or court.
   - 1.2. Has a ceiling height of not less than 7 feet (2134 mm).
   - 1.3. Has a longer side at least 65 percent open and unobstructed.
2. Skylights are not required to open directly onto a public way, yard or court.

1204.3 Artificial light. Artificial light shall be provided that is adequate to provide an average illumination of 10 footcandles (107 lux) over the area of the room at a height of 30 inches (762 mm) above the floor level.

1204.4 Stairway illumination. Stairways within dwelling units and exterior stairways serving a dwelling unit shall have an illumination level on tread runs of not less than 1 footcandle (11 lux). Stairways in other occupancies shall be governed by Chapter 10.

1204.4.1 Controls. The control for activation of the required stairway lighting shall be in accordance with *the California Electrical Code.*

1204.5 Emergency egress lighting. The means of egress shall be illuminated in accordance with Section 1008.1.

1204.6 Light pollution reduction. [BSC-CG] *See California Green Building Standards Code, Chapter 5, Division 5.1 for additional light pollution reduction requirements.*

1204.7 Campus lighting for parking facilities and primary walkways at California state universities, colleges and community colleges. [BSC] *Artificial light shall be provided for parking facilities and primary walkways at California State Universities, colleges and community colleges in accordance with provisions of this subsection. This subsection shall not apply to the University of California unless the Regents of the University of California, by resolution, make it applicable.*

1204.7.1 Lighting requirements. *Based on the recommendations of the most current edition of the Illumination Engineering Society lighting handbook, the following lighting standards shall be used for all new construction of open parking facilities, covered parking facilities and primary walkways:*

1. *Open and covered parking facilities.*
   - *1.1. Medium-level activity usage when medium usage is present.*
   - *1.2. High-level activity usage when high usage is present.*
2. *Primary campus walkways.*
   - *2.1. Medium-level activity usage when medium usage is present.*
   - *2.2. High-level activity usage when high usage is present.*

SECTION 1205—YARDS OR COURTS

1205.1 General. This section shall apply to yards and courts adjacent to exterior openings that provide natural light or ventilation. Such yards and courts shall be on the same lot as the building.

1205.2 Yards. Yards shall be not less than 3 feet (914 mm) in width for buildings two stories or less above grade plane. For buildings more than two stories above grade plane, the minimum width of the yard shall be increased at the rate of 1 foot (305 mm) for each additional story. For buildings exceeding 14 stories above grade plane, the required width of the yard shall be computed on the basis of 14 stories above grade plane.

1205.3 Courts. Courts shall be not less than 3 feet (914 mm) in width. Courts having windows opening on opposite sides shall be not less than 6 feet (1829 mm) in width. Courts shall be not less than 10 feet (3048 mm) in length unless bounded on one end by a public way or yard. For buildings more than two stories above grade plane, the court shall be increased 1 foot (305 mm) in width and 2 feet

(610 mm) in length for each additional story. For buildings exceeding 14 stories above grade plane, the required dimensions shall be computed on the basis of 14 stories above grade plane.

1205.3.1 Court access. Access shall be provided to the bottom of courts for cleaning purposes.

1205.3.2 Air intake. Courts more than two stories in height shall be provided with a horizontal air intake at the bottom not less than 10 square feet (0.93 m^2) in area and leading to the exterior of the building unless abutting a yard or public way.

1205.3.3 Court drainage. The bottom of every *court* shall be properly graded and drained to a public sewer or other approved disposal system complying with the *California Plumbing Code*.

SECTION 1206—SOUND TRANSMISSION

1206.1 Scope. This section shall apply to common interior walls, partitions and floor/ceiling assemblies between adjacent dwelling units and sleeping units or between dwelling units and sleeping units and adjacent public areas.

1206.2 Airborne sound. Walls, partitions and floor-ceiling assemblies separating dwelling units and sleeping units from each other or from public or service areas shall have a sound transmission class of not less than 50 where tested in accordance with ASTM E90, or have a Normalized Noise Isolation Class (NNIC) rating of not less than 45 if field tested, in accordance with ASTM E336 for airborne noise. Alternatively, the sound transmission class of walls, partitions and floor-ceiling assemblies shall be established by engineering analysis based on a comparison of walls, partitions and floor-ceiling assemblies having sound transmission class ratings as determined by the test procedures set forth in ASTM E90. Engineering analysis shall be performed by a registered design professional. Penetrations or openings in construction assemblies for piping; electrical devices; recessed cabinets; bathtubs; soffits; or heating, ventilating or exhaust ducts shall be sealed, lined, insulated or otherwise treated to maintain the required ratings. This requirement shall not apply to entrance doors; however, such doors shall be tight fitting to the frame and sill.

1206.2.1 Masonry. The sound transmission class of concrete masonry and clay masonry assemblies shall be calculated in accordance with TMS 302 or determined through testing in accordance with ASTM E90.

1206.3 Structure-borne sound. Floor-ceiling assemblies between dwelling units and sleeping units or between a dwelling unit or sleeping unit and a public or service area within the structure shall have an impact insulation class rating of not less than 50 where tested in accordance with ASTM E492, or have a Normalized Impact Sound Rating (NISR) of not less than 45 if field tested in accordance with ASTM E1007. Alternatively, the impact insulation class of floor-ceiling assemblies shall be established by engineering analysis based on a comparison of floor-ceiling assemblies having impact insulation class ratings as determined by the test procedures in ASTM E492. Engineering analysis shall be performed by a registered design professional.

Exception: *Impact sound insulation is not required for floor-ceiling assemblies over nonhabitable rooms or spaces not designed to be occupied, such as garages, mechanical rooms or storage areas.*

1206.4 Allowable interior noise levels. *Interior noise levels attributable to exterior sources shall not exceed 45 dB in any habitable room. The noise metric shall be either the day-night average sound level (Ldn) or the community noise equivalent level (CNEL), consistent with the noise element of the local general plan.*

1206.5 Acoustical control. [BSC-CG] *See California Green Building Standards Code, Chapter 5, Division 5.5 for additional sound transmission requirements.*

SECTION 1207—ENHANCED CLASSROOM ACOUSTICS

1207.1 General. Enhanced classroom acoustics, where required by this section, shall comply with Section 808 of ICC A117.1.

1207.2 Where required. In Group E occupancies, enhanced classroom acoustics shall be provided in all classrooms with a volume of 20,000 cubic feet (566 m^3) or less.

SECTION 1208—INTERIOR SPACE DIMENSIONS

1208.1 Minimum room widths. Habitable spaces, other than a kitchen, shall be not less than 7 feet (2134 mm) in any plan dimension. Kitchens shall have a clear passageway of not less than 3 feet (914 mm) between counter fronts and appliances or counter fronts and walls.

[HCD 1] *For limited-density owner-built rural dwellings, there shall be no requirements for room dimensions, provided there is adequate light and ventilation and adequate means of egress.*

1208.2 Minimum ceiling heights. Occupiable spaces, habitable spaces and corridors shall have a ceiling height of not less than 7 feet 6 inches (2286 mm) above the finished floor. Bathrooms, toilet rooms, kitchens, storage rooms and laundry rooms shall have a ceiling height of not less than 7 feet (2134 mm) above the finished floor.

Exceptions:

1. In one- and two-family dwellings, beams or girders spaced not less than 4 feet (1219 mm) on center shall be permitted to project not more than 6 inches (152 mm) below the required ceiling height.
2. If any room in a building has a sloped ceiling, the prescribed ceiling height for the room is required in one-half the area thereof. Any portion of the room measuring less than 5 feet (1524 mm) from the finished floor to the ceiling shall not be included in any computation of the minimum area thereof.
3. The height of mezzanines and spaces below mezzanines shall be in accordance with Section 505.2.

4. Corridors contained within a dwelling unit or sleeping unit in a Group R occupancy shall have a ceiling height of not less than 7 feet (2134 mm) above the finished floor.
5. ***[OSHPD 1, 2, 3 & 5]*** *Minimum ceiling heights shall comply with Section 1224.4.10.*
6. ***[OSHPD 4]*** *Minimum ceiling heights shall comply with Section 1227.8.*

1208.2.1 Furred ceiling. Any room with a furred ceiling shall be required to have the minimum ceiling height in two-thirds of the area thereof, but in no case shall the height of the furred ceiling be less than 7 feet (2134 mm).

1208.3 Dwelling unit size. Dwelling units shall have a minimum of 190 square feet (17.7 m^2) of habitable space.

1208.4 Room area. Every dwelling unit shall have not less than one room that shall have not less than 120 square feet (11.2 m^2) of net floor area. Sleeping units and other habitable rooms of a dwelling unit shall have a net floor area of not less than 70 square feet (6.5 m^2).

Exception: Kitchens are not required to be of a minimum floor area.

1208.5 Efficiency dwelling units. ***[HCD 1]*** *Unless modified by local ordinance pursuant to Health and Safety Code Section 17958.1, efficiency dwelling units shall comply with the following:*

1. The unit's habitable space shall comply with Sections 1208.1 through 1208.4.
2. The unit shall be provided with a separate closet.
3. For other than Accessible, *adaptable* dwelling units, the unit shall be provided with a kitchen sink, cooking appliance and refrigerator, each having a clear working space of not less than 30 inches (762 mm) in front. Light and ventilation conforming to this code shall be provided.
4. The unit shall be provided with a separate bathroom containing a water closet, lavatory and bathtub or shower.

SECTION 1209—ACCESS TO UNOCCUPIED SPACES

1209.1 Crawl spaces. Crawl spaces shall be provided with not less than one access opening that shall be not less than 18 inches by 24 inches (457 mm by 610 mm).

1209.1.1 [SPCB] *Accessible under-floor areas shall be provided with an 18-inch by 24-inch (457 mm by 610 mm) access crawl hole. Pipes, ducts and other nonstructural construction shall not interfere with the accessibility to or within under-floor areas.*

1209.2 Attic spaces. An opening not less than 20 inches by 30 inches (559 mm by 762 mm) shall be provided to any attic area having a clear height of over 30 inches (762 mm). Clear headroom of not less than 30 inches (762 mm) shall be provided in the attic space at or above the access opening.

1209.3 Mechanical appliances. Access to mechanical appliances installed in under-floor areas, in attic spaces and on roofs or elevated structures shall be in accordance with the *California Mechanical Code*.

SECTION 1210—TOILET AND BATHROOM REQUIREMENTS

[P] 1210.1 Required fixtures. The number and type of plumbing fixtures provided in any occupancy shall comply with *the California Plumbing Code.*

[P] 1210.2 Finish materials. Walls, floors and partitions in toilet and bathrooms shall comply with Sections 1210.2.1 through 1210.2.5.

[OSHPD 1, 2, 3 & 5] *Facilities subject to OSHPD 1, 2, 3 & 5 shall also comply with Section 1224.4.11.*

[OSHPD 4] *Facilities subject to OSHPD 4 shall also comply with Section 1227.9.*

[P] 1210.2.1 Floors and wall bases. In other than dwelling units, toilet, bathing and shower room floor finish materials shall have a smooth, hard, nonabsorbent surface. The intersections of such floors with walls shall have a smooth, hard, nonabsorbent vertical base that extends upward onto the walls not less than 4 inches (102 mm).

[P] 1210.2.2 Walls and partitions. Walls and partitions within 2 feet (610 mm) of service sinks, urinals and water closets shall have a smooth, hard, nonabsorbent surface, to a height of not less than 4 feet (1219 mm) above the floor, and except for structural elements, the materials used in such walls shall be of a type that is not adversely affected by moisture.

Exception: This section does not apply to the following buildings and spaces:

1. Dwelling units and sleeping units.
2. Toilet rooms that are not for use by the general public and that have not more than one water closet.

Accessories such as grab bars, towel bars, paper dispensers and soap dishes, provided on or within walls, shall be installed and sealed to protect structural elements from moisture.

1210.2.3 Adult changing table surround. Walls and partitions within 2 feet (610 mm) measured horizontally from each end of the adult changing table and to a height of not less than 72 inches (1829 mm) above the floor shall have a smooth, hard, nonabsorbent surface, and except for structural elements, the materials used in such walls shall be of a type that is not adversely affected by moisture.

[P] 1210.2.4 Showers. Shower compartments and walls above bathtubs with installed shower heads shall be finished with a smooth, nonabsorbent surface to a height not less than 72 inches (1829 mm) above the drain inlet.

[P] 1210.2.5 Waterproof joints. Built-in tubs with showers shall have waterproof joints between the tub and adjacent wall.

[P] 1210.3 Privacy. Public restrooms shall be visually screened from outside entry or exit doorways to ensure user privacy within the restroom. This provision shall also apply where mirrors would compromise personal privacy. Privacy at water closets and urinals shall be provided in accordance with Sections 1210.3.1 and 1210.3.2.

Exception: Visual screening shall not be required for single-occupant toilet rooms with a lockable door.

[P] 1210.3.1 Water closet compartment. Each water closet utilized by the public or employees shall occupy a separate compartment with walls or partitions and a door enclosing the fixtures to ensure privacy.

Exceptions:

1. Water closet compartments shall not be required in a single-occupant toilet room with a lockable door.
2. Toilet rooms located in child day care facilities and containing two or more water closets shall be permitted to have one water closet without an enclosing compartment.
3. This provision is not applicable to toilet areas located within Group I-3 occupancy housing areas.

[P] 1210.3.2 Urinal partitions. Each urinal utilized by the public or employees shall occupy a separate area with walls or partitions to provide privacy. The walls or partitions shall begin at a height not more than 12 inches (305 mm) from and extend not less than 60 inches (1524 mm) above the finished floor surface. The walls or partitions shall extend from the wall surface at each side of the urinal not less than 18 inches (457 mm) or to a point not less than 6 inches (152 mm) beyond the outermost front lip of the urinal measured from the finished backwall surface, whichever is greater.

Exceptions:

1. Urinal partitions shall not be required in a single-occupant or family or assisted-use toilet room with a lockable door.
2. Toilet rooms located in child day care facilities and containing two or more urinals shall be permitted to have one urinal without partitions.

SECTION 1211—UV GERMICIDAL IRRADIATION SYSTEMS

1211.1 General. Where ultraviolet (UV) germicidal irradiation systems are provided, they shall be listed and labeled in accordance with UL 8802 and installed in accordance with their listing and the manufacturer's instruction.

SECTION 1212 [HCD 1 & HCD 2]—GARAGE DOOR SPRINGS

1212.1 General. *This section shall apply to applications listed in Sections 1.8.2.1.1 and 1.8.2.1.3 regulated by the Department of Housing and Community Development.*

1212.1.1 Garage door extension springs. *Every garage door extension spring sold or offered for sale, whether new or as a replacement, or installed in any garage or carport which is accessory to an apartment house, hotel, motel or dwelling shall conform to the following requirements:*

Hard-drawn spring wire shall conform to ASTM A227/A227M-17 or a more current version, and shall be made by the steel processes described therein, conforming to the chemical composition requirements listed and meeting the standards of steel heat as set forth by the ladle analysis. Wire tensile strength and dimension variations shall meet the prescribed properties of established standards.

Oil-tempered wire shall conform to ASTM A229/A229M-17 or a more current version, and shall be made by the steel processes described therein, conforming to the chemical composition requirements listed and meeting the standards of steel heat as set forth by the ladle analysis. Wire tensile strength and dimension variations shall meet the prescribed properties of established standards.

Extension springs shall be fabricated from either hard-drawn spring wire or oil-tempered wire as specified above.

1212.2 Design standards. *Minimum design standard shall be 9,000 cycles. (One cycle is an action on the door from the fully closed position, to the fully open position, and returned to the fully closed position.)*

1212.3 Certification. *Mill certification of wire physical tests and chemical properties shall be kept on file by the spring manufacturer.*

Physical cycling tests shall be performed for each extension spring design and shall be certified by an approved testing agency acceptable to the department and reports kept on file by the spring manufacturer.

1212.4 Restraining devices. *Each extension spring shall be equipped with an approved device capable of restraining the spring or any part thereof in the event it breaks. Restraining devices shall be physically tested for each extension spring family of products in accordance with ANSI/DASMA 103-2017 or an equivalent standard. Tests shall be certified by an approved testing agency acceptable to the department. Test reports shall be kept on file by the manufacturer responsible for the restraining device.*

1212.5 Identification. *Extension springs, or door systems with extension springs and restraining devices shall be permanently identified as to manufacturer and shall indicate maximum recommended stretch. Both extension springs and restraining devices shall bear information stating that they have been manufactured in accordance with requirements of the California Department of Housing and Community Development.*

1212.6 Installation. *Installation of extension springs, restraining devices and hardware shall be in accordance with the door manufacturer's installation instructions. Instructions shall be provided by the door manufacturer and shall specify the approved method of restraint and maximum recommended stretch. Unless otherwise permitted by the door manufacturer's installation instructions, the hardware and extension springs shall be mounted to nominal 2 by 6 framing members, conforming to the applicable provisions of Section 2303.*

SECTION 1213 [HCD 1]—POLLUTANT CONTROL

1213.1 Finish material pollutant control. *Finish materials, including adhesives, sealants, caulks, paints and coatings, aerosol paints and coatings, carpet systems, carpet cushion, carpet adhesive, resilient flooring systems and composite wood products shall meet the volatile organic compound (VOC) emission limits in accordance with the California Green Building Standards Code (CALGreen), Chapter 4, Division 4.5.*

SECTION 1214—RESERVED

SECTION 1215—RESERVED

SECTION 1216—RESERVED

SECTION 1217—RESERVED

SECTION 1218—RESERVED

SECTION 1219—RESERVED

SECTION 1220—RESERVED

SECTION 1221—RESERVED

SECTION 1222—RESERVED

SECTION 1223—RESERVED

SECTION 1224 [OSHPD 1]—HOSPITALS

1224.1 Scope. [OSHPD 1] *The provisions of this section shall apply to general acute-care hospitals and general acute-care hospitals providing only acute medical rehabilitation center services. The provisions of Section 1225 shall apply to distinct part skilled nursing and intermediate-care services on a general acute-care hospital license provided in a separate unit. The provisions of Section 1229 shall apply to distinct part chemical dependency recovery hospitals on a general acute-care license provided in a separate unit.*

[OSHPD 1R] *This section shall apply to buildings removed from acute care service, in compliance with Part 10, California Existing Building Code, Chapter 3A, and remain under OSHPD jurisdiction.*

1224.2 Application. *New buildings and additions, alterations or repairs to existing buildings subject to licensure shall comply with applicable provisions of the California Electrical Code, California Mechanical Code, California Plumbing Code, California Energy Code, California Fire Code, California Existing Building Code (Parts 3, 4, 5, 6, 9 and 10 of Title 24) and this section.*

Exceptions:

1. *Facilities licensed and in operation prior to the effective date of this section shall not be required to institute corrective alterations or construction to comply with any new requirements imposed thereby or subsequently, except where specifically required or where the enforcing agency determines that a definite hazard to health and safety exists. Facilities for which preliminary drawings have been submitted to the enforcing agency prior to the effective date of this change shall not be required to comply with such new requirements, provided working drawings are submitted within one year of the effective date of such new requirements.*
2. *A change in function shall require compliance with all the functional requirements for new construction in this code, including requirements in Sections 1224, 1225, 1226, 1227 and 1228.*
3. *The provisions of this section do not prohibit the use of alternate space utilization, new concepts of design, treatment techniques, equipment and alternate finish materials provided the intent of this section is accommodated and written approval for such alternative is granted by the enforcing agency. Written substantiating evidence in support of the alternate and a written request for consideration shall be submitted to the enforcing agency.*
4. *Nothing in this section shall prohibit the provisions of required services from a centralized service facility serving two or more licensed facilities when approved in writing by the licensing agency. Buildings and required spaces for services provided in a separate centralized services facility shall comply with all applicable provisions of these regulations and applicable local codes and ordinances for the services so provided.*
5. *Acute psychiatric hospitals and general acute-care hospitals providing only acute medical rehabilitation center services may provide for surgical and anesthesia services to be provided by an outside licensed facility when approved by the licensing agency.*
6. *When the Corrections Standards Authority, the Department of Corrections or the Department of Youth Authority determines that a particular requirement for hospitals located in a correctional facility may compromise the safety, security or protection of staff, inmates or property, the enforcement agency shall consider an alternate design.*

1224.2.1 Removed from acute care service [OSHPD 1R]. *Hospital buildings removed from acute care service in accordance with Part 10, California Existing Building Code, Section 312A may provide outpatient services and other uses. Required Basic or Supplemental Services on the hospital's license may not be provided.*

Exceptions:

1. *Duplicative hospital services when permitted by California Department of Public Health.*
2. *Skilled Nursing Services may be provided in conformance with Section 1225.*
3. *Acute Psychiatric Services may be provided in conformance with Section 1228.*

1224.3 Definitions. *Specific terms and definitions are provided to facilitate consistency in the interpretation and application of these requirements. Some of these terms may have a broader definition in other contexts, but the definitions provided here reflect the use of the terms for OSHPD requirements.*

AIR CONDITIONING. *The process or system by which simultaneously the temperature, humidity, air motion and quality are maintained within required limits.*

AIRBORNE INFECTION ISOLATION ROOM. *A single-occupancy patient room where environmental factors are controlled in an effort to minimize the transmission of those infectious agents usually spread from person to person by droplet nuclei associated with coughing and inhalation.*

AMBULATORY CARE. *A defined health care encounter(s) of less than 24 hours in duration that requires direct professional health care support within a specific facility.*

AMBULATORY SURGICAL FACILITY. *Any surgical facility organized for the purpose of providing procedural, invasive surgical care to patients with the expectation that they will be recovered sufficiently to be discharged in less than a 24-hour period.*

ANGIOGRAPHY. *The radiographic visualization of blood vessels following introduction of contrast material for purposes of diagnosis.*

BASIC SERVICES. *Those essential services required for licensure as a hospital, including medical, nursing, surgical, anesthesia, laboratory, radiology, pharmacy, dietary services and support services. See "SUPPLEMENTAL SERVICES."*

BIOTERRORISM. *The use or threat of use, of biological agents to intimidate a political entity or population group.*

CENTRAL AIR-HANDLING SYSTEMS. *Any units requiring ductwork on the supply or inlet side and serving more than one room.*

CHANGE IN FUNCTION. *A change in function is a change in activity, service or licensed service provided, within the project limits, that does not necessarily change the use, specific use and/or occupancy. Conversion of a space that results in a change in activity such that the space will be required to satisfy the functional requirements under a different code sub-section than that of the prior use is considered a change in function.*

CLEAR DIMENSION. *An unobstructed room dimension exclusive of built-in casework and equipment and available for functional use.*

COURT. *An open exterior space bounded on three or more sides by the walls of a structure.*

ENVIRONMENT OF CARE. *Those features in a built health care entity that are created, structured and maintained to support quality health care.*

EXAM ROOM. *A room with a bed, stretcher or examination table and capability for periodic monitoring (e.g., measurement of blood pressure or pulse oximetry) in which procedures that do not require a specialized suite can be performed (e.g., pelvic examination, blood transfusion).*

FLOOR AREA, CLEAR. *The actual occupied area exclusive of fixed or wall-mounted cabinets, fixed beds and furnishings, built-in shelves, toilet rooms, closets, lockers, wardrobes, alcoves, anterooms or vestibules.*

GENERAL ACUTE-CARE HOSPITAL. *A hospital, licensed by the California Department of Public Health, having a duly constituted governing body with overall administrative and professional responsibility and an organized medical staff which provides 24-hour inpatient care, including the basic services.*

HANDWASHING STATION. *A clinical staff-use area that provides a handwashing fixture, cleansing agents and means for drying hands. Handwashing stations shall be immediately accessible to the patient care area they serve without requiring passage through a doorway unless hands-free door operation is provided. Refer to the California Plumbing Code, Section 210.0 for the definition of handwashing fixture.*

HOSPITAL. *A general acute-care hospital, including those providing only acute medical rehabilitation center services and acute psychiatric hospitals.*

HOUSEKEEPING. *Services anywhere within a health care facility that include general cleaning and tidying and the provision and positioning of identified materials, e.g., soaps, towels, etc. (While routine disinfection protocols can be included in such a definition, the definition is not intended to include complex, nonroutine disinfection procedures nor the nonroutine disposition of hazardous materials such as potentially toxic drugs or other chemicals and radioactive wastes.)*

INVASIVE PROCEDURE. *A procedure that is performed in an aseptic or sterile surgical field and penetrates the protective surfaces of a patient's body (e.g., subcutaneous tissue, mucous membranes, cornea). Invasive procedures fall into one or more of the following categories:*

1. *Requires entry into or opening of a sterile body cavity (i.e., cranium, chest, abdomen, pelvis, joint spaces).*
2. *Involves insertion of an indwelling foreign body into a normally sterile site that results in a high risk of infection.*
3. *Includes excision and grafting of burns that cover more than 20 percent of total body area.*

4. *Does not begin as an open procedure but has a greater than 5 percent probability of requiring conversion to an open procedure.*

LDR. *Labor, Delivery, Recovery (an unlicensed patient bed)*

LDRP. *Labor, Delivery, Recovery, Postpartum (a licensed patient bed)*

LICENSING AGENCY. *The Department of Public Health, Licensing and Certification.*

LOCATION TERMINOLOGY *(terms for relationship to an area or room)*

ADJACENT. *Located next to but not necessarily connected to the identified area or room.*

DIRECTLY ACCESSIBLE. *Connected to the identified area or room through a doorway or other opening without going through an intervening room or public space.*

IMMEDIATELY ACCESSIBLE. *Available either in the identified area or room, or directly accessible from a room or area located within the same department or service space.*

IN. *Located within the identified area or room.*

READILY ACCESSIBLE. *Located within the same department or service space as the identified area or room, located in and shared with an adjacent unit, or within 200 feet (60.96 m) of the department or service space in an accessible corridor.*

MONOLITHIC. *A surface free of fissures, cracks, perforations and crevices.*

MONOLITHIC CEILING. *A ceiling constructed with a surface free of fissures, cracks and crevices. Any penetrations such as lights, diffusers and access panels shall be sealed or gasketed. Lay-in ceilings are not considered "monolithic."*

NURSING UNIT. *A designated patient care area of the hospital which is planned organized, operated and maintained to function as a unit. It includes patient rooms with adequate support facilities, services and personnel providing nursing care and necessary management of patients.*

OPERATING ROOM. *A room specifically designed for the performance of surgical procedures. (In common understanding, this means most types of surgical procedures, especially those involving the administration of anesthesia, multiple personnel, recovery room access and a fully controlled environment.)*

HYBRID OPERATING ROOM. *A room that meets the definition of an operating room and is also equipped to enable diagnostic imaging before, during and after surgical procedures. Imaging equipment is permanently installed in the room and may include MRI, fixed single-plane and bi-plane tomographic imaging systems and computed tomographic equipment.*

Note: *Use of portable imaging technology does not make an operating room a hybrid operating room.*

OUTPATIENT SERVICE. *An organizational unit of the hospital, which provides nonemergency healthcare services to patients.*

PATIENT CARE LOCATIONS. *Multi-patient treatment rooms, where allowed, may provide patient care stations in bays or cubicles as follows:*

BAY (patient). *A space for human occupancy with one hard wall at the headwall and up to one hard wall at either side, with two to three soft walls (e.g., cubicle curtains or portable privacy screen). The required area for the specific patient care space shall be provided within the cubicle curtain and not overlap with access circulation aisle.*

CUBICLE. *A space intended for human occupancy that has at least one opening and no door and is enclosed on three sides with full-height or partial-height partitions.*

PATIENT CARE STATION. *A designated space for a specific patient care function. This term does not imply any structural requirement (e.g., a Post-anesthesia Care Unit (PACU) can have 10 patient care stations of which three are rooms, three are cubicles and four are bays).*

PATIENT ROOM. *Licensed patient bed rooms or rooms occupied by one or more individuals during an overnight stay over 24 hours in a health facility. Also referred to as a patient bedroom.*

PERIOPERATIVE. *Patient care and other related supportive activities before, during or after the operative event.*

PROCEDURE ROOM. *A room designated for the performance of patient care that requires high-level disinfection or sterile instruments and some environmental controls but is not required to be performed with the environmental controls of an operating room.*

PROTECTIVE ENVIRONMENT. *A bedded unit or patient room where severely immunosuppressed patients are cared for.*

RESTRICTED AREA. *Applies to a designated space contained within the semi-restricted area and accessible only through a semi-restricted area. The restricted area includes operating and other rooms in which operative or other invasive procedures are performed. Such space has one or more of the following attributes: specific signage, physical barriers, security controls and protocols that delineate requirements for monitoring, maintenance, attire and use.*

ROOM. A space enclosed by hard walls and having a door. Where the word "room" or "office" is used, a separate, enclosed space for the one named function is intended. Otherwise, the described area may be a specific space in another room or common area.

SCRUB SINK. *A sink used to wash and scrub the hands and arms during the aseptic preparation for surgery and equipped with a supply spout and controls as required for a handwashing fixture. Refer to the California Plumbing Code Sections 210.0 and 221.0.*

SEMI-RESTRICTED AREA. *Applies to peripheral areas that support surgical services or intermediate level procedures or imaging. These areas may include storage for equipment and clean and sterile supplies; work area for processing instruments; sterile processing facilities; hand scrub stations; corridors leading from the unrestricted area to the restricted area of the surgical suite; entrances to*

staff changing areas; pre- and postoperative patient care areas; and sterile processing facilities. The semi-restricted area of the surgical suite is entered directly from the unrestricted area past a nurse station or from other areas. Public access is controlled.

SERVICE SINK. *A sink located in a housekeeping room and designed for the purpose of cleaning mops and the disposal of waste water.*

SERVICE SPACE. *Service Space refers to the distinct area of a health facility where a licensed Basic Service or Supplemental Service is provided. The Service Space shall include all the functional area requirements required to deliver the specific Service. Basic Service Spaces are identified in Sections 1224.14 through 1224.27. Supplemental Service Spaces are identified in Sections 1224.28 through 1224.42. Similar distinctions are made between Basic and Supplemental or Optional Services in Section 1225 through Section 1228. Required functional areas may be a portion of a larger space, one or more Patient Care Locations, support areas or separate Rooms as defined in Section 1224.3. See departmental boundary requirements under Section 1224.4.7.6.*

SUB-ACUTE CARE. *A segment within a continuum of levels of care determined by patient acuity, clinical stability and resource needs.*

SUPPLEMENTAL SERVICE. *An inpatient or outpatient service which is not required to be provided by law or regulation for licensure. A supplemental service, when provided, must accommodate the provisions of this section.*

Note: *See "BASIC SERVICES."*

SURGICAL SERVICE SPACE. *A space that includes the operating room(s) and service areas.*

TREATMENT ROOM. *A room designated for the performance of patient care activities that may require high-level disinfected or sterile instruments but do not require the environmental controls of a procedure room. A treatment room may be used for a variety of functions, patient examination and various treatments or procedures, including wound packing, suture placement, or casting. This room may contain specialized equipment as identified in the functional program.*

UNRESTRICTED AREA. *Applies to any area of the surgery or medical department that is not defined as semi-restricted or restricted. These areas may include a central control point for designated personnel to monitor the entrance of patients, personnel and materials into the semi-restricted areas; staff changing areas; a staff lounge; offices; waiting rooms or area; pre- and postoperative patient care areas; or access to procedure rooms. Public access may be limited.*

1224.4 GENERAL CONSTRUCTION.

1224.4.1 Jurisdiction.

1224.4.1.1 Services/systems and utilities.

[OSHPD 1] *Services/systems and utilities shall comply with California Existing Building Code Section 310A.*

[OSHPD 1R] *Services/systems and utilities shall only originate in, or pass through or under structures which are under the jurisdiction of the Office of Statewide Hospital Planning and Development (OSHPD).*

1224.4.1.2 Means of egress.

[OSHPD 1*] Means of egress shall comply with Part 10, California Existing Building Code, Section 308A.*

[OSHPD 1R] *Means of egress shall only pass through structures that are under the jurisdiction of the Office of Statewide Hospital Planning and Development (OSHPD).*

1224.4.2 Environmental engineering and support service spaces. *Spaces for dietary, laundry, morgue, ambulance entrance, receiving areas, power plants, mechanical equipment, incinerator, garbage can cleaning, automobile parking and storage areas for garbage, trash and medical gases shall be located and constructed to minimize noise, steam, odors, hazards and unsightliness in patient-care areas and bedrooms.*

1224.4.3 Treatment spaces. *Radiology, laboratory, pharmacy, physical therapy and service spaces serving only outpatients and similar outpatient service departments shall not be located in nursing units, surgical units, perinatal units, nursery areas, central sterilization rooms, food-service' areas, power plants, mechanical equipment rooms, maintenance shops, general storage, laundry, employees' dressing or housekeeping facilities.*

Exception: *Physical and occupational therapy spaces of a rehabilitation service may serve both outpatients and inpatients.*

1224.4.4 Support areas for patient care. *Identifiable spaces shall be provided for each function indicated in all Basic and applicable Supplemental Service Space sections with requirements for support areas. The following rooms and spaces are common to most types of health care facilities and the requirements associated with each, as listed below, shall be used unless modified under a specific Service Space section.*

1224.4.4.1 Examination, treatment and procedure rooms.

1224.4.4.1.1 Examination room. *Unless specified elsewhere, if an exam room is provided, it shall have a minimum clear floor area of 80 square feet (7.4 m^2), the least dimension of which shall be 8 feet (2438 mm). The room shall contain a handwashing fixture and accommodations for written or electronic documentation shall be provided.*

1224.4.4.1.2 Treatment room. *Unless specified elsewhere, if a treatment room is provided, it shall have a minimum clear floor area of 120 square feet (11.15 m^2), the least dimension of which shall be 10 feet (3048 mm). A minimum of 3 feet (914 mm) is required between the sides and foot of the bed/gurney/table and any wall or other fixed obstruction. The room shall contain an examination light, a work counter for medical equipment, a handwashing fixture, cabinets, medication storage and counter space for writing or electronic documentation. If used for exercise stress testing, include space for a crash cart and patient resuscitation and omit the exam light. Multi-bed treatment rooms shall have separate patient cubicles with a minimum clear floor area of 80 square feet (7.4 m^2) per cubicle. Each cubicle shall contain an examination light, counter and storage facilities. In multi-bed treatment rooms, a handwashing fixture shall be provided in the room for each three or fewer cubicles.*

1224.4.4.1.3 Airborne infection isolation exam/treatment room. *When provided, the airborne infection isolation room shall be an exam/treatment room, shall be labeled with the words "Airborne Infection Room", and provide the following:*

1. *Capacity. Each airborne infection isolation exam/treatment room shall contain only one examination table or recliner.*
2. *Handwashing station. A handwashing station shall be located in each airborne infection isolation exam/treatment room.*
3. *Gowning and storage area. An area for gowning and storage of clean and soiled materials shall be located directly outside or inside the entry door to the airborne infection isolation exam/treatment room.*
4. *Doors. Room doors shall be self-closing and include latching devices.*
5. *Sealed-tight room. Room perimeter walls, ceiling, floors, doors and penetration shall be sealed tightly to minimize air infiltration from the outside or from other spaces.*
6. *Ventilation. The ventilation shall be provided as required by the California Mechanical Code for airborne infection isolation room.*

1224.4.4.1.3.1 Airborne infection isolation exam/treatment anteroom. *An airborne infection isolation anteroom is not required; however, when an anteroom is provided, it shall meet the following requirements:*

1. *The anteroom shall provide space for persons to don personal protective equipment before entering the patient room.*
2. *All doors to the anteroom shall have self-closing devices.*
3. *The anteroom shall provide storage of personal protective equipment (e.g., respirators, gowns, gloves) and clean equipment.*
4. *Ventilation shall be provided in the anteroom as required by the California Mechanical Code for airborne infection isolation anteroom.*

1224.4.4.1.4 Procedure room. *Unless specified elsewhere, if a procedure room is provided, it shall meet the requirements in this section.*

1224.4.4.1.4.1 General.

(1) *Application. The governing body shall perform a clinical assessment of the procedures to be performed to determine the appropriate room type and location for these procedures and document this in the Functional Program in compliance with the California Administrative Code, Section 7-119. Where a procedure room is used for multiple procedure types, the room shall meet the most stringent requirements for the space.*

(2) *Location. The procedure room shall meet the requirements of a semi-restricted area. The procedure room shall be permitted to be accessed from a semi-restricted corridor or from an unrestricted corridor.*

1224.4.4.1.4.2 Space requirements.

(1) *Area. Procedure rooms shall have a minimum clear floor area of 130 square feet (12.08 m^2). Procedure rooms where anesthesia will be administered using an anesthesia machine and supply carts shall have a minimum clear floor area of 160 square feet (14.86 m^2). Procedure rooms where procedures will be performed that require additional personnel and/or large equipment shall be sized to accommodate the personnel and equipment planned to be in the room during procedures, including additional personnel and equipment that will be needed for emergency rescue.*

(2) *Clearances. Procedure rooms shall have the following minimum clearances around the table, gurney or procedure chair:*

(a) *3 feet 6 inches (1070 mm) on each side.*

(b) *3 feet (914.4 mm) at the head and foot. Where an anesthesia machine and associated supply cart is used, the clearance at the head shall be a minimum of 6 feet (1830 mm).*

(3) *Fixed encroachments into the minimum clear floor area. Fixed encroachments shall be permitted to be included when determining the minimum clear floor area for a procedure room as long as:*

(a) *The encroachments do not extend more than 12 inches (305 mm) into the minimum clear floor area.*

(b) *Where a sterile field is provided, the encroachment shall not extend into the sterile field.*

(c) *The encroachment width along each wall does not exceed 10 percent of the length of that wall.*

1224.4.4.1.4.3 Documentation area.

(1) *Accommodations for written and/or electronic documentation shall be provided in the procedure room.*

(2) *Where a built-in feature is provided for documentation, it shall allow for direct observation of the patient.*

1224.4.4.1.4.4 Patient privacy. *Provisions shall be made for patient visual and speech privacy.*

1224.4.4.1.4.5 Handwashing station. *A handwashing station shall be provided in the procedure room. Where a hand scrub station is directly accessible to the procedure room, omission of the handwashing station is permitted.*

1224.4.4.1.5 Seclusion room. *Where provided, seclusion rooms shall comply with the following requirements:*

1224.4.4.1.5.1 General.

1. *Capacity. Each room shall accommodate only one patient.*
2. *Layout and access. Seclusion rooms shall be accessed through an anteroom or vestibule that also provides access to a toilet room. The door openings to the anteroom and the toilet room shall have a minimum clear width of 3 feet 8 inches (1118 mm).*

3. *The room(s) shall be located to permit observation from the nurse station.*
4. *Seclusion rooms shall be permitted to be grouped together and may share a common vestibule/anteroom.*

1224.4.4.1.5.2 Space requirements. *Seclusion rooms shall have a minimum clear floor area of 60 square feet (5.57 m^2) with a minimum wall length of 7 feet (2134 mm) and a maximum wall length of 11 feet (3353 mm).*

Exception: *Where a room for restraining patients is authorized by the California Department of Public Health, it shall have a minimum clear floor area of 80 square feet (7.43 m^2) with a minimum wall length of 7 feet (2134 mm) and a maximum wall length of 11 feet (3353 mm).*

1224.4.4.1.5.3 Special design elements. *Seclusion rooms shall be designed and constructed in compliance with the following requirements:*

1. *The walls, ceiling and floor of the seclusion room shall be designed to withstand direct and forceful impact. If padded materials are used inside the room, they shall meet the interior finish requirements in Chapter 8, Interior Finishes, of this code.*
2. *Minimum ceiling height shall be 9 feet (2743 mm).*
3. *Doors.*
    - 3.1. *Door hardware shall be ligature resistant.*
    - 3.2. *The entrance door to the seclusion room shall swing outward.*
    - 3.3. *Doors shall permit staff observation of the patient through a view panel while also maintaining provisions for patient privacy. The maximum sill height shall be 36 inches (914 mm) above the finish floor. The view panel shall be fixed glazing with polycarbonate or laminate on the inside of the glazing.*
4. *Seclusion rooms shall not contain outside corners or edges.*
5. *All items in the room (e.g., lighting fixtures, sprinkler heads, HVAC grilles and surveillance cameras, etc.) shall be tamper resistant.*
6. *Electrical switches and receptacles are prohibited in the seclusion room.*

1224.4.4.2 Nurse station(s). *This area shall have space for counters and storage and at least one hand-washing station shall be located in or directly accessible to the nurse station. It may be combined with or include centers for reception, charting and communication.*

1224.4.4.3 Specimen and blood collection facilities.

1224.4.4.3.1 Specimen collection facilities. *When provided, specimen collection facilities shall comply with the following requirements:*

1. *Urine collection rooms shall be equipped with a water closet and handwashing station.*

    Exception: *The handwashing station may be located immediately outside the collection room when the specimen is used for drug testing.*
2. *Use of the toilet room provided within the examination and treatment room shall be permitted for specimen collection.*

1224.4.4.3.2 Blood collection facilities. *When provided, blood collection facilities shall comply with the following requirements:*

1. *Space for a chair and work counter shall be provided.*
2. *A handwashing station shall be provided.*

1224.4.4.4 Medication station. *Provision shall be made for distribution of medications. This shall be done from a medication preparation room or from a self-contained dispensing unit.*

1224.4.4.4.1 Medication preparation room. *If provided, this room shall be lockable. When a medication preparation room is to be used to store one or more self-contained medication dispensing units, the room shall be designed with adequate space to prepare medicines with the self-contained medication dispensing unit(s) present. Medication preparation rooms shall include:*

1. *Work counter.*
2. *Handwashing station.*
3. *Refrigerator.*
4. *Locked storage for controlled drugs.*

1224.4.4.4.2 Self-contained medication dispensing unit. *If provided, a self-contained medication dispensing unit shall be located at the nurse station, in the clean utility room, or in an area where access to the self-contained medication dispensing unit is under the monitoring and control of nursing staff. Self-contained medication dispensing units shall be provided with essential power and lighting.*

1224.4.4.5 Nourishment area or room. *Nourishment areas or rooms required in patient care areas shall include the following:*

1. *Sink*
2. *Work counter*
3. *Refrigerator*
4. *Storage cabinets*
5. *Equipment for hot and cold nourishment between scheduled meals.*
6. *The nourishment shall include space for trays and dishes used for nonscheduled meal service.*

7. *Provisions and space shall be included for separate temporary storage of unused and soiled dietary trays not picked up at mealtime.*
8. *Handwashing stations separate from the nourishment sink shall be in the nourishment area or immediately accessible without passing through a door.*

1224.4.4.6 Clean utility/workroom. *The clean workroom or clean supply room shall be separate from and have no connection with the soiled workroom or soiled holding room. If the room is used for preparing patient care items, it shall contain the following:*

1. *Work counter*
2. *Handwashing station*
3. *Storage facilities for clean and sterile supplies*

1224.4.4.6.1 Clean supply room. *If the room is used only for storage and holding as part of a system for distribution of clean and sterile materials, the work counter or a handwashing station may be omitted.*

1224.4.4.7 Soiled utility/workroom. *The soiled workroom or soiled holding room shall be separate from and have no connection with either clean workrooms or clean supply rooms. The soiled utility/workroom shall contain:*

1. *Clinical sink (or equivalent flushing-rim fixture).*
2. *Handwashing station*
3. *Work counter*
4. *Space for separate covered containers for soiled linen and/or waste*

1224.4.4.7.1 Soiled holding room. *Rooms used only for temporary holding soiled material may omit the clinical sink and work counter. If the flushing-rim clinical sink is eliminated, facilities for cleaning bedpans shall be provided elsewhere.*

1224.4.4.8 Toilet rooms. *Separate toilet rooms shall be provided for the use of patients, staff and public.*

1224.4.4.8.1 Staff toilets. *The number of staff toilets provided in a health facility shall comply with the requirements of the California Plumbing Code, Table 4-2. When staff toilet rooms are required to be dedicated to a specific Service Space, the number of staff toilet rooms provided under the California Plumbing Code shall be based on the number of staff within the specific Service Space served. Satellite service spaces do not require dedicated toilet rooms.*

1224.4.4.8.2 Signage. *When provided, single-user toilets shall include a door-mounted geometric symbol, as identified in Section 11B-703.7.2.6.3, Unisex toilet and bathing facilities and wall signage designating use for patients, staff or public. When existing toilet rooms are not compliant with Section 11B-603, Toilet and bathing rooms, directional signage in compliance with Section 11B-216.8, Toilet rooms and bathing rooms, shall also be provided.*

Exception: *Patient toilet rooms accessed directly from patient bedrooms are not required to include signage.*

1224.4.5 Outpatient waiting rooms. *Waiting rooms for outpatients shall provide a seating area and space for wheelchairs and have public corridor access. Public toilets, drinking fountains and telephones shall be readily accessible.*

Note: *One waiting area may serve more than one department or service.*

1224.4.5.1 Outpatient access. *Outpatient access to services shall not traverse a nursing unit.*

1224.4.6 Miscellaneous requirements.

1224.4.6.1 Station outlets. *Station outlets for oxygen, vacuum and medical air shall comply with Table 1224.4.6.1.*

1224.4.6.2 Gas and vacuum systems. *The design, installation and testing of medical gas and vacuum systems shall conform to Table 1224.4.6.1 and NFPA 99.*

1224.4.6.3 Hyperbaric facilities. *The design and construction of hyperbaric facilities shall conform to NFPA 99; Health Care Facilities and Section 1224.39.5.*

1224.4.6.4 Laboratories. *The design and construction of hospital laboratories shall conform to NFPA 99.*

1224.4.6.5 Nurse call systems. *The location of nurse call devices shall comply with Table 1224.4.6.5. The design of call systems shall comply with the California Electrical Code, Part 3 of Title 24.*

1224.4.7 Corridors.

1224.4.7.1 Width. *The minimum width of corridors and hallways shall be 8 feet (2438 mm).*

Exception: *Patient-care corridors and hallways in hospitals for patients who are not bedridden shall have a minimum clear and unobstructed width of 6 feet (1829 mm). For the purposes of this section, bedridden patients shall be defined as patients confined to beds who would be transported or evacuated in beds, stretchers, or litters.*

TABLE 1224.4.6.1—STATION OUTLETS FOR OXYGEN, VACUUM (SUCTION) AND MEDICAL AIR SYSTEMS[1, 6]

	LOCATIONS	OXYGEN	VACUUM	MEDICAL AIR	WAGD[3]	INSTRUMENT AIR
1	Patient rooms (medical/surgical unit)	1/bed	1/bed	—	—	—
2	Examination or treatment (medical/surgical unit and postpartum care)	1/room	1/room	—	—	—
3	Airborne infection isolation or protective environment rooms medical/surgical unit)	1/bed	1/bed	—	—	—
4	Seclusion room (medical/surgical unit and postpartum care)	1/bed	1/bed	—	—	—
5	Intensive care (general)	3/bed	3/bed	1/bed	—	—
6	Airborne infection isolation (intensive care)	3/bed	3/bed	1/bed	—	—
7	Coronary-care service space	3/bed	2/bed	1/bed	—	—
8	Pediatric intensive care	3/bed	3/bed	1/bed	—	—
9	Newborn intensive care	3/bassinet	3/bassinet	3/bassinet	—	—
10	Newborn nursery (full term)	1/4 bassinets[2]	1/4 bassinets[2]	1/4 bassinets[2]	—	—
11	Pediatric and adolescent	1/bed	1/bed	1/bed	—	—
12	Pediatric nursery	1/bassinet	1/bassinet	1/bassinet	—	—
13	Psychiatric patient room	—	—	—	—	—
14	Seclusion treatment room (psychiatric unit)	—	—	—	—	—
15	General operating room and Class 3 imaging room	2/room	5/room	1/room	1/room	—
16	Cardio and special procedures	2/room	5/room	1/room	1/room	—
17	Orthopedic surgery	2/room	5/room	1/room	1/room	—
18	Surgical cystoscopic and other endo-urologic procedures	1/room	3/room	—	—	—
19	Post-anesthesia care unit	2/bed	3/bed	1/bed	—	—
20	Anesthesia workroom	1/workstation	—	1/workstation	—	—
21	Endoscopy procedure room	1/room	3/room	—	—	—
22	Postpartum bedroom	1/bed	1/bed	—	—	—
23	Cesarean operating/delivery room	2/room	4/room	1/room	1/room	—
24	Recovery space for cesarean delivery	1/bed	3/bed	1/bed	—	—
25	Infant resuscitation space[4]	3/bassinet	3/bassinet	3/bassinet	—	—
26	Labor room	1/room	1/room	—	—	—
27	OB recovery room	1/bed	3/bed	—	—	—
28	Labor/delivery/recovery (LDR)[5]	1/bed	1/bed	—	—	—
29	Labor/deliver/recovery/postpartum (LDRP)[5]	1/bed	1/bed	—	—	—
30	Initial emergency management	1/bed	1/bed	1/bed	—	—
31	Triage area (definitive emergency care)	1/station	1/station	—	—	—
32	Definitive emergency care examination or treatment rooms	1/bed	1/bed	1/bed	—	—
33	Observation unit[8]	1/bed	1/bed	—	—	—
34	Trauma/cardiac room(s)	2/bed	3/bed	1/bed	—	—
35	Orthopedic and cast room	1/room	1/room	—	—	—
36	Cardiac catheterization lab	2/bed	2/bed	2/bed	—	—
37	Autopsy room	—	1/workstation	—	—	—
38	MRI	1/room	1/room	1/room	—	—
39	Procedure room and Class 2 imaging room	2/room	2/room	1/room	—	—
40	Hyperbaric suite pre-procedure/patient holding area	2/station	2/station	—	—	—
41	Electroconvulsive therapy procedure room	1/room[7]	1/room[7]	—	—	—
42	Central sterile—soiled work area	—	—	—	—	1[9, 10]
43	Central sterile—clean work area	—	—	—	—	—[9, 10]
44	GI—processing room	—	—[11]	—	—	—[9, 10, 11]

1. For any area or room not described above, the facility clinical staff shall determine outlet requirements after consultation with the enforcing agency.
2. Four bassinets may share one outlet that is accessible to each bassinet.
3. WAGD stands for "waste anesthesia gas disposal" system.
4. When infant resuscitation takes place in a room such as cesarean section/delivery or LDRP, then the infant resuscitation services shall be provided in that room in addition to the minimum service required for the mother.
5. One outlet for mother and one for each bassinet.
6. Renovation projects of existing spaces where the existing function is not changed, are not required to comply with the requirements of this table.
7. Use of portable equipment shall be permitted.
8. Use of portable equipment is permitted in outpatient observation units provided under Section 1224.39.6.
9. Use of portable equipment in lieu of a piped system shall be permitted.
10. In the GI processing room and the clean work area of the central sterile supply service, an instrument air outlet or portable compressed air shall be provided as required by the manufacturer of the equipment used. In the soiled work area of the central sterile processing service, an instrument air outlet or portable compressed air is required.
11. Vacuum or instrument air shall be provided if needed for the cleaning methods used.

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TABLE 1224.4.6.5—[OSHPD 1, 2, 3, 4 & 5] LOCATION OF NURSE CALL DEVICES • = Required						
AREA DESIGNATION	**STATION TYPE**	**1224**	**1225**	**1226**	**1227**	**1228**
Nursing Units						
Patient toilet room	*B*	•	•		•	
Patient bathing	*B*	•	•		•	
Special bathing	*E*	•				
Patient bed (nursing service)	*P,E,C*	•			•	
Patient bed (intensive care)	*P,E,C*	•			•	
Patient bed (LDR/LDRP)	*P,E,C*	•			•	
Patient bed (Dementia Unit)	*P*	•	•		•	
Patient bed (SNF/ICF)	*P*	•	•		•	
NICU	*E,C*	•			•	
Nursery	*E,C*	•			•	
Support Areas						
Nurse/control station	*M*	•	•	•	•	•
Medication preparation room	*D*	•			•	
Soiled workroom/utility/holding	*D*	•			•	
Clean workroom/utility/holding	*D*	•			•	
Diagnostic and Treatment Areas						
Seclusion room or vestibule	*E*	•				•
Emergency exam, treatment and triage rooms	*P,E*	•			•	
Operating room/Cesarean	*E,C*	•		•	•	
Delivery room/Birthing room	*E,C*	•		•	•	
Observation unit bed/gurney	*P,E,C*	•			•	
Pre-op patient care	*P,E,C*	•		•	•	
Post-op patient care/PACU	*P,E,C*	•		•	•	
Imaging exam/procedure room	*E,C*	•		•	•	
Procedure Room, including Endoscopy	*E,C*	•		•	•	
Patient toilet room	*B*	•		•[1]	•	
Electroconvulsive therapy	*E,C*	•			•	•

Station Types
P = Patient Station, B = Bath Station, E = Staff Emergency, C = Code Call, M = Master, D = Duty
1. Not required for Primary Care, Chronic Dialysis, Rehabilitation or Psychology Clinics.

1224.4.7.2 Light traffic. *Service corridors and hallways with anticipated light traffic volume for nonpatient use may be reduced to a width of 5 feet (1524 mm) if approved by the enforcing agency.*

Exception: *Corridors and hallways in administrative and business areas may be reduced to a width of 44 inches (1118 mm).*

1224.4.7.3 Outpatient services. *Outpatient clinics which contain facilities for outpatient use only, such as laboratory, x-ray, physical therapy or occupational therapy, shall have a minimum corridor or hallway width of 5 feet (1524 mm). Outpatient departments caring for one or more nonambulatory outpatients shall have a minimum corridor or hallway width of 6 feet (1829 mm). Corridors serving gurney or stretcher traffic shall comply with minimum width requirements of Section 1020.3. Outpatient clinics and outpatient departments consisting only of waiting rooms, business offices, doctor's offices and examining rooms, where there is no traffic through such area to other services or to exits from the building, shall have a minimum corridor or hallway width of 44 inches (1118 mm).*

1224.4.7.4 Handrails. *Corridors for patient traffic in areas providing skilled nursing, intermediate care or rehabilitation services shall be furnished with a handrail on both sides at a height not less than 30 inches (762 mm) or greater than 36 inches (914 mm).*

1224.4.7.5 Connections. *Corridor systems shall connect all patient rooms and basic services.*

Exception: *Covered pedestrian walkways connecting separate buildings are permitted for ambulatory, psychiatric or chemical dependency patients.*

1224.4.7.6 Departmental boundaries. *Department/service space areas shall be contiguous and include internal circulation to access each of the rooms/spaces associated with it, as identified under the specific Service Space requirements. Identifiable*

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spaces are required for each of the indicated functions for all service areas, including their support spaces. Where the words "room" or "offices" are used, a separate, enclosed space for the one named function is intended; otherwise, the described area may be specific space in another room or common area.

Exceptions:

1. *Satellite radiology, laboratory, pharmacy and physical and occupational therapy space serving inpatients may be located in nursing units and inpatient treatment areas.*
2. *Rooms and functional areas specifically noted under the Service Space requirements that may be shared with other units and departments.*

1224.4.8 Doors and door openings.

1224.4.8.1 Toilet room doors. *Doors to toilet rooms shall have an opening of not less than 32 inches (813 mm) clear in width and shall be equipped with hardware which will permit the door to swing outward or in a manner to negate the need to push against a patient who may have collapsed within the toilet room.*

1224.4.8.2 Pocket doors. *Pocket sliding doors are not permitted.*

Exception: *Administration and business areas.*

1224.4.9 Windows and screens.

1224.4.9.1 Windows*. Rooms approved for the housing of patients shall be provided with natural light by means of exterior glazed openings excluding clerestory windows, obscure glass and skylights, with an area not less than one tenth of the total floor area.*

1224.4.9.2 Operation and sills. *Patient room windows shall have sills not more than 36 inches (914 mm) above the floor. If operable windows are provided that require the use of tools or keys for operation, the tools or keys shall be located at the nurse station.*

Exception: *Window sills in special nursing care areas may be up to 60 inches (1524 mm) above the floor. Sill height does not apply to newborn nurseries and rooms intended for occupancy less than 24 hours.*

1224.4.9.2.1 Airborne infection isolation or protective environment rooms. *If operable windows are provided in airborne infection isolation or protective environment rooms, they shall only be operable by the use of tools or keys which shall be located at the nurse station.*

1224.4.9.3 Psychiatric unit windows. *Safety glass or plastic glazing materials shall be used in windows in psychiatric patient areas.*

1224.4.9.4 Screens. *Windows which may be frequently left in an open position shall be provided with insect screens of 16 meshes to the inch.*

1224.4.9.5 Light and ventilation. *All portions of a building used by patients, personnel or other persons shall be provided with artificial light and a mechanically operated ventilating system as specified in the California Electrical Code and the California Mechanical Code.*

1224.4.10 Ceiling heights.

1224.4.10.1 Minimum height. *The minimum height of ceilings shall be 8 feet (2438 mm).*

Exception: *Closet, toilet room and bathroom minimum ceiling heights and soffits over fixed cabinets and work surfaces, shall not be less than 7 feet (2134 mm).*

1224.4.10.2 Minimum height with fixed ceiling equipment. *Operating rooms, emergency rooms, delivery rooms, radiographic rooms and other rooms containing ceiling-mounted, major fixed equipment or ceiling-mounted surgical light fixtures shall have ceiling heights to accommodate the equipment or fixtures and their normal movement. Suspended tracks, rails and pipes located in the traffic path for patients in beds and/or on stretchers, including those in inpatient service areas, shall be not less than 7 feet (2134 mm) above the floor.*

Exception: *Mobile suspended tracks such as traverse rails for overhead patient lifts that may be moved out of the traffic path shall provide a clearance of not less than 6 feet, 8 inches (2032 mm) above the floor when in use.*

1224.4.11 Interior finishes. *For imaging, examination/treatment, procedure and operating rooms, also see Table 1224.4.11.4a.*

1224.4.11.1 Floor finishes. *Floor finishes shall be smooth, waterproof and durable. Flooring surfaces shall provide smooth transitions between different floor materials. Slip-resistant flooring products shall be used for flooring surfaces in wet areas (e.g., kitchens, shower and bath areas), ramps, stairways, entries from exterior to interior space and other areas as determined by the functional program. Joints for floor openings for pipes, ducts and conduits shall be tightly sealed. Joints of structural elements shall be similarly sealed.*

Exception: *Upon written appropriate documented requests, the licensing agency may grant approval of the installation of carpets. See Table 1224.4.11.*

TABLE 1224.4.11—ACCEPTABLE CEILING AND CARPET LOCATIONS

AREAS/ROOMS [3,4]	GENERAL ACUTE CARE HOSPITAL CEILING/CARPET		ACUTE PSYCHIATRIC HOSPITAL CEILING/CARPET		SKILLED NURSING AND INTERMEDIATE-CARE FACILITIES CEILING/CARPET		CLINIC CEILING/CARPET	
Patient bedrooms	3	*	3	*	3	*	—	—
Patient corridors/hallways	3	*	3	*	3	*	3	*
Airborne infection isolation rooms	2	N	2	N	2	N	2	N
Protective environment rooms	1	N	1	N	1	N	-	-
Nurse or administration station	3	Y	3	Y	3	Y	3	Y
Utility rooms	2	N	2	N	2	N	2	N
Surgical units[2]	2	N	—	—	—	—	2	N
Operation rooms, sterile core	1	N	—	—	—	—	1	N
Surgical corridors/hallways	2	N	—	—	—	—	2	N
Recovery	3	N	—	—	—	—	3	N
Radiological unit[2]	3	*	3	*	—	—	3	—
X-ray rooms[1]	3	N	3	N	—	—	3	N
Treatment rooms[2]	2	N	3	N	2	N	2	N
Examination rooms	3	*	3	*	3	*	3	*
Administration	4	Y	4	Y	4	Y	4	Y
Central sterile supply	2	N	2	N	2	N	2	N
Clinical laboratories	3	N	3	N	—	—	3	N
Pharmacy	3	*	3	*	3	*	3	*
Morgue and autopsy	3	N	—	—	—	—	—	—
General storage rooms	3	N	3	N	3	N	3	N
Housekeeping rooms	2	N	2	N	2	N	2	N
Laundry	1[5]	N	1[5]	N	1[5]	N	—	—
Soiled linen	2	N	3	N	3	N	3	N
Clean linen	3	N	3	N	3	N	3	N
Kitchens	1[5]	N	1[5]	N	1[5]	N	1[5]	N
Dining rooms	3	*	3	*	3	*	3	*
Dishwasher rooms	2	N	2	N	2	N	2	N
Dietary day storage	2	N	2	N	2	N	—	—
Catheterization laboratory	1	N	—	—	—	—	—	—
Chronic dialysis	3	*	—	—	—	—	3	*
Coronary care	3	*	—	—	—	—	—	—
Dental	3	*	—	—	—	—	3	*
Hydrotherapy	2	N	2	N	2	N	2	N
Intensive-care nursery	3	*	—	—	—	—	—	—
Intensive care	3	*	—	—	—	—	—	—
Occupational therapy	3	*	3	*	3	*	3	*
Obstetrical unit[2]	3	*	—	—	—	—	—	—
Delivery rooms	1	N	—	—	—	—	—	—
Labor rooms, LDRP and LDR	3	N	—	—	—	—	—	—
Nurseries	3	N	—	—	—	—	—	—
Physical therapy	3	*	3	*	3	*	3	*
Radiation therapy	3	*	—	—	—	—	3	*
Speech pathology and audiology	3	Y	3	Y	3	Y	3	Y

Ceilings:

1 – Continuous monolithic surface equal in smoothness to enamel plaster.
2 – Smooth and easily cleanable without perforations or fissures.
3 – Pin perforated, fine fissured or lightly textured.
4 – Any finish meeting code requirements.

Carpets:

Yes = Y
No = N

* *Upon approval by the licensing agency with adequate maintenance procedure. However, should the carpet not be maintained adequately, the licensing agency has the right to have it removed and replaced with another acceptable material.*

Footnotes:

1. *Carpet permitted in mammography.*
2. *Except those rooms specified otherwise.*
3. *For rooms not listed, contact the Office of Statewide Hospital Planning and Development (OSHPD).*
4. *Table applies to new construction, additions, remodels and conversions. The patching and replacement of existing materials will be permitted.*
5. *Lay-in ceiling meeting the requirements of Section 1224.4.11.4.1.7 may be substituted in laundry and kitchens.*

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TABLE 1224.4.11.4a—EXAMINATION/TREATMENT, IMAGING, PROCEDURE AND OPERATING ROOM CLASSIFICATION[1, 2]				
ROOM	**USE**	**ROOM TYPE**	**LOCATION**	**SURFACES**
Exam or treatment room	*Patient care that may require high-level disinfected or sterile instruments but does not require the environmental controls of a procedure room*	*Unrestricted area*	*Accessed from an unrestricted area*	*Flooring: cleanable and wear-resistant for the location; stable, firm and slip-resistant* *Wall finishes: washable* *Ceiling: cleanable with routine housekeeping equipment; lay-in ceiling permitted*
Class 1 imaging room	*Diagnostic radiology, fluoroscopy, mammography, computed tomography (CT), ultrasound, magnetic resonance imaging (MRI) and other imaging modalities. Services that either* *a) use natural orifice entry and do not penetrate natural protective membranes or* *b) are low-risk needle-based procedures that do not require a sterile field.*			
Procedure room	*Patient care that requires high-level disinfection of the room, sterile instruments and some environmental controls but does not require the environmental controls of an operating room. Endoscopic procedures*	*Semi-restricted area*	*Accessed from an unrestricted or a semi-restricted area*	*Flooring: cleanable and wear-resistant for the location; stable, firm and slip-resistant* *Floor and wall base assemblies: monolithic floor with integral coved wall base carried up the wall a minimum of 6 inches* *Wall finishes: washable; free of fissures, open joints or crevices* *Ceiling: smooth and without crevices, scrubbable, non-absorptive, non-perforated; capable of withstanding cleaning chemicals; lay-in ceiling permitted if gasketed or each ceiling tile weighs at least 1 pound per square foot and no perforated, tegular, serrated or highly textured tiles*
Class 2 imaging room	*Diagnostic and therapeutic procedures such as coronary, neurological or peripheral angiography. Electrophysiology procedures*			
Operating room	*Invasive procedures[3] or any procedure during which the patient will require physiological monitoring and is anticipated to require active life support*	*Restricted area*	*Accessed from a semi-restricted area*	*Flooring: cleanable and wear-resistant for the location, stable, firm and slip-resistant* *Floor and wall assemblies: monolithic floor with integral coved wall base carried up the wall a minimum of 6 inches* *Wall finishes: washable; free of fissures, open joints or crevices* *Ceiling: monolithic, scrubbable, capable of withstanding cleaning and/or disinfecting chemical, gasketed access openings*
Class 3 imaging room	*Invasive procedures[3] or any Class 2 procedure during which the patient will require physiological monitoring and is anticipated to require active life support*			

1. *This table includes a brief description of the services performed in these room types and a summary of some applicable requirements that appear elsewhere in the California Building Code.*
2. *Other requirements that apply to these room types include, but are not limited to, ventilation, lighting and sound transmission requirements. See California Mechanical Code Table 4-A and ASHRAE 170 for ventilation requirements. See California Electrical Code, Article 517 for lighting and power requirements. See California Building Code Table 1224.4.19 for noise transmission requirements.*
3. *"Invasive procedure" is defined in Section 1224.3 definitions.*

1224.4.11.1.1 Coved base. *Resilient flooring, if used in toilet and bathing rooms, shall be continuous and extend upward onto the wall at least 5 inches (127 mm) to minimize moisture infiltration. Wood bases are prohibited except in waiting areas and administration departments.*

1224.4.11.1.2 Food preparation areas. *Floors in areas used for food preparation and assembly shall be water-resistant. Floor surfaces, including tile joints, shall be resistant to food acids. Floor construction in dietary and food preparation areas shall be free of spaces that can harbor pests.*

1224.4.11.1.3 Wet cleaning. *In all areas subject to frequent wet-cleaning methods, flooring materials shall not be physically affected by germicidal or other types of cleaning solutions.*

1224.4.11.1.4 Airborne infection isolation, airborne infection isolation exam/treatment and protective environment rooms. *These rooms and anterooms shall have seamless flooring with integral coved base.*

1224.4.11.2 Wall bases.

1224.4.11.2.1 Material. *The material and textures of bases and the installation thereof shall be such as to minimize dust-catching surfaces, moisture, infiltration and the harboring of vermin.*

Exception: *In locations where carpet is permitted as a floor finish material, the use of carpeted base (coved or strip base) up to a maximum height of 5 inches (127 mm) is also permissible.*

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1224.4.11.2.2 Wet cleaning. *Floor and wall base assemblies in the following rooms shall be monolithic and have an integral coved wall base that is carried up the wall a minimum of 6 inches (150 mm) and is tightly sealed to the wall:*

1. *Operating rooms*
2. *Interventional imaging rooms, including cardiac catheterization labs*
3. *Cesarean delivery rooms*
4. *Cystoscopy, urology and minor surgical procedure rooms*
5. *Endoscopy procedure rooms*
6. *Endoscopy instrument processing rooms*
7. *IV and chemotherapy preparation rooms*
8. *Airborne infection isolation (AII) rooms*
9. *Protective environment (PE) rooms*
10. *Anterooms to AII and PE rooms, where provided*
11. *Cast rooms*

The floors and wall bases of kitchens, soiled and clean utility rooms, housekeeping rooms with mop sinks, patient, public and staff sanitary facilities and other areas subject to frequent wet cleaning, shall also be homogeneous, nonabsorbent, smooth, easily cleaned and not physically affected by germicidal cleaning solutions, but may have tightly sealed joints and shall be constructed without voids at the intersection of floor and wall surfaces.

1224.4.11.3 Wall finishes. *Wall finishes shall comply with the following requirements:*

1. *Wall finishes shall be washable. In the vicinity of plumbing fixtures, wall finishes shall be smooth, scrubbable and water-resistant.*
2. *Wall finishes in areas such as operating rooms, delivery rooms and trauma rooms shall be monolithic, scrubbable and able to withstand cleaning with chemicals.*
3. *Wall finishes in operating rooms, cesarean delivery rooms, isolation rooms and sterile processing rooms shall be free of fissures, open joints or crevices that may retain or permit passage of dirt particles.*
4. *Wall finishes in areas such as clean corridors, central sterile supply spaces, specialized radiographic rooms and minor surgical procedure rooms shall be washable, smooth and able to withstand cleaning with chemicals.*
5. *Wall areas penetrated by pipes, ducts and conduits shall be tightly sealed to minimize entry of rodents and insects. Joints of structural elements shall be similarly sealed.*
6. *Wall finish requirements of Section 1224.4.11.3 do not apply to boiler rooms, mechanical equipment rooms, administration departments, other offices, enclosed stairways, maintenance shops and similar spaces.*

1224.4.11.3.1 Dietary and food preparation areas. *Dietary and food preparation areas shall comply with the following requirements:*

1. *In dietary and food preparation areas, wall construction, finish and trim, including the joints between the walls and the floors, shall be free of spaces that can harbor insects and rodents.*
2. *Wall surfaces in wet areas (e.g., kitchens, environmental services closets) shall be monolithic and all seams shall be covered and/or sealed.*

1224.4.11.4 Ceilings. *Ceilings in areas occupied by patients and the public shall be cleanable with the use of routine housekeeping equipment. Acoustic and lay-in ceiling, where used, shall not create ledges or crevices.*

1224.4.11.4.1 Ceiling finishes. *Ceiling finishes shall comply with Table 1224.4.11, Table 1224.4.11.4.1a and the following requirements:*

Semirestricted areas:

1. *Ceiling finishes in semirestricted areas such as airborne infection isolation exam/treatment rooms, surgical corridors, central sterile supply spaces and minor surgical procedure rooms, shall be nonabsorptive, nonperforated, capable of withstanding cleaning with chemicals, and without crevices that can harbor mold and bacterial growth.*
2. *If a lay-in ceiling is provided in semi-restricted areas, it shall be gasketed or each ceiling tile shall weigh at least one pound per square foot to prevent the passage of particles from the cavity above the ceiling plane into the semirestricted environment. Perforated, tegular, serrated cut or highly textured tiles are not acceptable.*

Restricted areas:

3. *Ceilings in restricted areas shall be monolithic with no cracks or perforations.*
4. *Ceilings in restricted areas shall be scrubbable and able to withstand cleaning and/or disinfecting chemicals.*
5. *All access openings in restricted area ceilings shall be gasketed.*

Dietary and laundry areas:

6. *Provide either a sealed monolithic and scrubbable gypsum board ceiling or a lay-in ceiling.*

7. *If a lay-in ceiling is provided, it shall include the following:*
    a) *A rust-free grid.*
    b) *Ceiling tiles that weigh at least one pound per square foot and are smooth, scrubbable, nonabsorptive, nonperforated and able to withstand cleaning with chemicals.*
8. *Ceiling finish requirements of Section 1224.4.11.4.1 do not apply to boiler rooms, mechanical equipment rooms, administration departments, other offices, enclosed stairways, maintenance shops and similar spaces.*

1224.4.12 Courts. *Where one or more walls of a court contain a door or window of one or more patients' bedrooms, the least dimension of the court shall be 20 feet (6096 mm) between facing structures.*

1224.4.13 Elevators.

1224.4.13.1 Patient. *Patient elevators shall have minimum inside platform dimensions of 5 feet by 8 feet (1524 mm by 2438 mm), and a minimum clear door opening of 4 feet 0 inches (1219 mm).*

1224.4.13.2 Passenger. *Passenger elevators shall have minimum inside platform dimensions of 4 feet 8 inches by 7 feet 4 inches (1422 mm by 2236 mm).*

1224.4.13.3 Patient services. *Buildings over one story in height with accommodations or services for patients on floors without grade-level entrance shall provide at least one patient elevator.*

1224.4.13.4 Low patient capacity. *If bed patients are accommodated on one or more floors, other than the main entrance floor or where operating rooms or delivery rooms are above or below the main entrance floor, at least one patient elevator shall be provided.*

1224.4.13.5 Medium patient capacity. *At least one patient elevator and one service elevator shall be provided in hospitals with a capacity of from 60 to 149 beds on floors other than the main entrance floor.*

1224.4.13.6 High patient capacity. *At least one patient elevator, one passenger elevator and one service elevator shall be provided in hospitals with a capacity of 150 or more beds on floors other than the main entrance floor.*

1224.4.14 Garbage, solid waste and trash storage. *Rooms or screening enclosures shall be provided for the washing and cleaning of garbage containers and for the storage of garbage, trash and other solid wastes. Such rooms or screening enclosures shall include the following:*

1. *A concrete floor with a curb and with a drain connected to the sewer.*
2. *Steam or hot-water and cold-water supply.*
3. *A minimum floor area of $^1/_2$ square foot (0.046 m^2) per bed, but not less than 25 square feet (2.3 m^2), the least dimension of which shall be 4 feet (1219 mm).*
4. *A method of limiting access to the material except by authorized persons.*

1224.4.15 Housekeeping room. *This room shall be a minimum floor area of 15 square feet (1.4 m^2). It shall contain a service sink or floor receptor and provisions for storage of supplies and housekeeping equipment.*

1224.4.16 Laundry and trash chutes. *Gravity-type laundry and trash chutes shall have a minimum diameter of 2 feet (610 mm) and shall be designed to prevent distribution of airborne contaminating elements to all floors served.*

1224.4.17 Telephone. *Each floor accommodating patients shall have a telephone installed for patient use. Such telephones shall be readily accessible to patients who are limited to wheel chairs and stretchers. This may not be required in separate buildings having six or fewer beds which are restricted to occupancy by ambulatory patients.*

1224.4.18 Grab bars. *Each toilet, bathtub and shower serving patients in rooms not required to provide mobility features, shall have conveniently placed grab bars that shall comply with Chapter 11B, Sections 11B-609.2, 11B-609.3, 11B-609.5, 11B-609.6 and 11B-609.8.*

Exception: *Excluding facilities designed for use by persons with disabilities, grab bars may be deleted from those facilities serving chemical dependency recovery and psychiatric patients.*

1224.4.19 Noise control.

1224.4.19.1 Impact noises. *Recreation rooms, exercise rooms, equipment rooms and similar spaces where impact noises may be generated, shall not be located directly over patient bed areas or delivery and operating suites, unless special provisions are made to minimize such noise.*

1224.4.19.2 Noise reduction. *The noise reduction criteria shown in Table 1224.4.19 shall apply to partitions, floors and ceiling construction in patient areas.*

TABLE 1224.4.19-SOUND TRANSMISSION LIMITATIONS IN HOSPITALS

NEW CONSTRUCTION	AIRBORNE SOUND TRANSMISSION CLASS (STC)[1]	
	Partitions	Floors
Patient room to patient room	45	50
Public space to patient room[3]	50	40
Service areas to patient room[4]	60	45
Patient room access corridor[5]	35	45
Exam room to corridor	35	
Exam room to exam room	50[2]	
Exam room to public space[3]	50	
Treatment room to room	50	
Treatment room to corridor	35	
Toilet room to public space[3]	45	
Consultation rooms/conference rooms to public space	50	
Consultation rooms/conference rooms to patient rooms	50	
Consultation room to corridor	35	
Patient room to MRI room	60	
Exam room to MRI room	60	
Public space to MRI room	50	
Staff lounges to patient rooms	45	

1. Sound Transmission Class (STC) shall be determined by tests in accordance with methods set forth in ASTM 90 and ASTM E413. Where partitions do not extend to the structure above, sound transmission through ceilings and composite STC performance shall be considered.
2. Treatment rooms shall be treated the same as patient rooms. STC rating may be reduced to 40 dBA for rooms with electronic masking. Electronic masking shall provide a maximum background level of 48 dBA.
3. Public space includes corridors (except patient room access corridors), lobbies, dining rooms, recreation rooms and similar space.
4. Service areas for the purposes of this table include kitchens, elevators, elevator machine rooms, laundries, garages, maintenance rooms, boiler and mechanical equipment rooms and similar spaces of high noise. Mechanical equipment located on the same floor or above patient rooms, offices, nurse stations and similar occupied space shall be effectively isolated from the floor.
5. Patient room access corridors contain composite walls with doors/windows and have direct access to patient rooms.
6. Renovation projects of existing spaces where the existing function is not changed, are not required to comply with the requirements of Table 1224.4.19.

1224.5 Communications Systems. *Technology and medical communication rooms shall comply with the California Electrical Code, California Mechanical Code, California Plumbing Code and the requirements of this section.*

1224.5.1 Telecommunications service entrance room. *The telecommunications service entrance room houses the point at which outside carrier data and voice circuits and services enter the facility and outdoor cabling interfaces with the building's internal cabling infrastructure. Each hospital facility shall have at least one telecommunications service entrance room, and each room that is provided shall be dedicated to the telecommunications function with related support facilities and meet the requirements of this section.*

1224.5.2 Technology equipment center.

1224.5.2.1 Number. *Each hospital shall have at least one technology equipment center space that is not used for any purpose other than electronic data storage, processing and networking.*

1224.5.2.2 Size. *The technology equipment center shall be sized to provide space to meet the service requirements for the required equipment.*

1224.5.2.3 Location. *The technology equipment center shall be located to minimize the risk of water damage, both from internal and external sources. The technology equipment center shall be located above any floodways or flood hazard areas as described in the National Flood Insurance Program.*

1224.5.3 Technology distribution room.

1224.5.3.1 Number. *There shall be a minimum of one technology distribution room on each floor of the facility.*

Exception: *For existing facilities not undergoing major renovation, a technology distribution room may serve adjacent floors.*

1224.5.3.2 Size.

1. *Technology distribution rooms shall be sized based on the area of the floor being served, with minimum clear dimensions as follows:*

Area Served in Square Feet (m^2)	*Minimum Technology Distribution Room Size*
≤8,000 square feet (740 m^2)	*10 feet by 10 feet (3.05 m by 3.05 m)*
8,001 – 15,000 square feet (1400 m^2)	*10 feet by 12 feet (3.05 m by 3.66 m)*
15,001 – 25,000 square feet (2325 m^2)	*10 feet by 14 feet (3.05 m by 4.27 m)*
> 25,000 square feet (2325 m^2)	*12 feet by 14 feet (3.66 m by 4.27 m)*

2. *Where ceilings are provided, the minimum clear height shall be 9 feet (2.75 m).*

   ***Exception:** Existing buildings shall be permitted to have a minimum clear height of 8 feet (2.44 m).*

***1224.5.3.3 Location.** Technology distribution rooms shall be provided throughout the facility as necessary to meet the maximum cable distance requirement for the cabling system specified.*

***1224.5.4 SPC/NPC compliance.** The location of spaces required by this section shall meet the requirements of California Existing Building Code, Section 310A, Compliance Alternatives for Services/Systems and Utilities.*

***1224.5.5 Access.** Access to the spaces required by this section shall be controlled and not require passage through patient-care or sterile space.*

***1224.5.6 Combining spaces.** The combining of the telecommunications service entrance room, technology equipment center and technology distribution room shall be permitted, provided that the requirements for each of the individual spaces are met.*

BASIC SERVICES

1224.6 Reserved.

1224.7 Reserved.

1224.8 Reserved.

1224.9 Reserved.

1224.10 Reserved.

1224.11 Reserved.

1224.12 Reserved.

1224.13 Reserved.

1224.14 NURSING SERVICE SPACE.

1224.14.1 Patient rooms.

***1224.14.1.1 Capacity.** No patient room shall be designed to accommodate more than four beds.*

***Exception:** Where renovation of existing individual patient rooms is undertaken in facilities built under the 2013, or prior, California Building Code, maximum room capacity shall be no more than the present capacity, to a maximum of eight patients per patient room. Placement of beds shall not be more than three deep from the exterior window.*

***1224.14.1.2 Space requirements.** In new construction, patient rooms shall have a minimum of 100 square feet (9.29 m^2) of clear floor area per bed in multiple-bed rooms and 120 square feet (11.15 m^2) of clear floor area for single-bed rooms. The dimensions and arrangement of rooms shall be such that there is a minimum of 3 feet (914 mm) between the sides and foot of the bed and any wall or any other fixed obstruction. In multiple-bed rooms, a minimum clearance of 3 feet (914 mm) shall be provided between beds and a clearance of 4 feet (1219 mm) shall be available at the foot of each bed to permit the passage of equipment and beds.*

***Exception:** Where renovation of existing patient rooms is undertaken in facilities built under the 2001 or prior California Building Code, patient rooms shall have no less than 80 square feet (7.43 m^2) of clear floor area per bed in multiple-bed rooms and 110 square feet. (10.22 m^2) of clear floor area in single-bed rooms.*

***1224.14.1.3 Windows.** Each patient room shall have a window in accordance with Section 1224.4.9.*

***1224.14.1.4 Arrangement.** Patient rooms shall not be designed to permit the placement of beds more than three deep from the exterior window, but shall be of such shape and dimensions to allow for the performance of routine functions, including the easy transfer of patients to and from bed to wheelchair or wheeled gurney.*

***1224.14.1.5 Outside exposure.** All patient bedrooms shall have an outside exposure and shall not be below ground level.*

***1224.14.1.6 Handwashing stations.** A handwashing station shall be provided in the patient room. This handwashing station shall be located at or adjacent to the entrance to the patient room with unobstructed access for use by health care personnel and others entering and leaving the room. Water spouts used shall have clearances adequate to avoid contaminating utensils and the contents of carafes, etc. In multiple-bed rooms the handwashing station shall be located outside of the patient's cubicle curtain so that it is immediately accessible to staff. Where renovation of patient rooms is undertaken a handwashing station shall be located in the patient toilet room or patient room.*

***1224.14.1.7 Toilet room.** Each patient shall have access to a toilet room without having to enter the general corridor area. One toilet room shall serve no more than four beds and no more than two patient rooms. The toilet room shall contain a water closet*

and a lavatory and the door shall swing outward or be double acting. Unless located in a toilet room, bedpan-washing fixtures shall be installed in dedicated rooms, separate from patient care areas.

1224.14.1.8 Patient storage. *Each patient room shall include a separate wardrobe, locker or closet for storing clothing and personal effects for each patient.*

1224.14.1.9 Privacy. *A method of assuring visual privacy for each patient shall be maintained in patient rooms and in tub, shower and toilet rooms. Windows or doors within a normal sightline that would permit observation into the room shall be arranged or curtained as necessary for patient privacy. In multiple-bed rooms, visual privacy from casual observation by other patients and visitors shall be provided for each patient. The design for privacy shall not restrict patient access to the entrance, lavatory or toilet room.*

1224.14.1.10 Grab bars. *Grab bars shall be installed in accordance with Section 1224.4.18.*

1224.14.1.11 Room identification. *Each patient room shall be labeled with an identification number, letter or combination of the two.*

1224.14.2 Support areas. *The size and location of each support area will depend upon the numbers and types of beds served. If it has direct access to the unit, some support areas may be arranged and located to serve more than one nursing unit as indicated below, but, unless noted otherwise, at least one such support area shall be provided on each nursing floor.*

1224.14.2.1 Nurse station(s). *Nurse station(s) shall be provided in each nursing unit and shall comply with Section 1224.4.4.2.*

1224.14.2.2 Nurse or supervisor office. *A nurse or supervisor office shall be provided and may be shared between adjacent nursing units on the same floor.*

1224.14.2.3 Toilet room(s) for staff use. *Staff toilet rooms may be shared between adjacent nursing units on the same floor.*

1224.14.2.4 Multipurpose room(s) *Multipurpose rooms shall be provided for staff, patients, patients' families for patient conferences, reports, education, training sessions and consultation. These rooms must be readily accessible to each nursing unit. One such room may serve several nursing units and/or departments.*

1224.14.2.5 Examination or treatment room(s). *Examination or treatment rooms are optional. If provided, provision shall be made to preserve patient privacy from observation from outside the exam room though an open door.*

1224.14.2.6 Clean utility/workroom. *Clean utility/workroom shall be provided and shall comply with Section 1224.4.4.6.*

1224.14.2.7 Soiled workroom or soiled holding room. *A soiled workroom or soiled holding room shall be provided and shall comply with Section 1224.4.4.7.*

1224.14.2.8 Medication station. *A medication station shall be provided in each nursing unit and shall comply with Section 1224.4.4.4.*

1224.14.2.9 Clean linen storage. *Each nursing unit shall contain a designated area for clean linen storage. This may be within the clean utility room or a separate closet.*

1224.14.2.10 Nourishment area. *A nourishment area or room shall be provided for each nursing unit and shall comply with Section 1224.4.4.5.*

1224.14.2.11 Ice machine. *Each nursing unit shall have equipment to provide ice for treatments and nourishment. Ice making equipment may be in the clean utility room/holding room or at the nourishment station. Ice intended for human consumption shall be from self-dispensing icemakers.*

1224.14.2.12 Equipment storage room. *Appropriate room(s) shall be provided for storage of equipment necessary for patient care with not less than 10 square feet (0.93 m^2) per patient bed.*

1224.14.2.13 Gurneys and wheelchairs. *Provide a storage room or alcove for gurneys and wheelchairs which shall be a minimum of 15 square feet (1.39 m^2).*

1224.14.2.14 Centralized bathing facilities. *When individual bathing facilities are not provided in patient rooms, there shall be at least one shower and/or bathtub for each 12 beds without such facilities. Each bathtub or shower shall be in an individual room or enclosure that provides privacy for bathing, drying and dressing. Each centralized bathing facility shall have direct access to a patient toilet and handwashing fixture.*

1224.14.2.15 Special bathing facilities. *If provided, special bathing facilities for patients on gurneys, carts and wheelchairs shall include space for an attendant.*

1224.14.2.16 Patient toilet room(s). *Common patient toilet room(s), in addition to those serving bed areas, should be located adjacent to multipurpose room(s) and within, or directly accessible to each central bathing facility.*

1224.14.2.17 Emergency equipment storage. *Space shall be provided for emergency equipment that is under direct control of the nursing staff, such as a cardiopulmonary resuscitation (CPR) cart. This space shall be directly accessible from the nursing station, but out of normal traffic.*

1224.14.2.18 Housekeeping room. *Housekeeping rooms may be shared between adjacent compatible nursing units.*

1224.14.2.19 Grab bars. *Grab bars shall be installed in accordance with Section 1224.4.18.*

1224.14.3 Airborne infection isolation rooms.

1224.14.3.1 General. *Single rooms shall be provided for the isolation of patients with airborne communicable disease at a ratio of one room for each 35 licensed beds, and for each major fraction thereof. At least one airborne infection isolation room shall be*

provided. Airborne infection isolation rooms shall be labeled with the words "Airborne Infection Room" on or adjacent to the anteroom side of the door between the isolation room and the anteroom.

Exceptions:

1. *Acute psychiatric hospitals shall provide airborne infection isolation rooms at the ratio of one room for each 50 beds, or major fraction thereof.*
2. *Airborne infection isolation rooms are not required for chemical dependency recovery services.*

1224.14.3.2 Anteroom doors. *Airborne infection isolation room(s) shall have self-closing and latching devices on all anteroom doors.*

1224.14.3.3 Anteroom. *A separate anteroom shall be provided between the airborne infection isolation room and the corridor, which shall constitute the primary entrance to the airborne infection isolation room. This anteroom shall have a handwashing station, work counter at least 3 feet (914 mm) long, cabinets and space to gown and to store clean and soiled materials. There shall be a view window from the anteroom to the isolation room and means to allow for airflow from the anteroom into the airborne infection isolation room. Doors shall be aligned to allow large equipment to be wheeled into the airborne infection isolation room unless a secondary door complying with Section 1224.14.3.2 is provided. One anteroom may serve no more than two airborne infection isolation rooms.*

1224.14.3.4 Secondary entry. *When a secondary entry is provided, the secondary doors shall be provided with locking devices which are readily operable from the room side and which are readily operable by the facility staff on the other side. When key locks are used on isolation rooms, keys shall be located at the nurse station in a prominent readily accessible location.*

1224.14.3.5 Sealed-tight room. *Airborne infection isolation room perimeter walls, ceilings, floors, doors and penetrations shall be sealed tightly to minimize air infiltration from the outside or from other spaces.*

1224.14.3.6 Adjoining toilet room. *Each isolation room shall have its own directly accessible toilet room with an emergency nurse call system, a lavatory, a shower providing a seat or a space for a shower chair and a toilet equipped with a bedpan flushing attachment with a vacuum breaker.*

1224.14.4 Protective environment room(s).

1224.14.4.1 General. *Protective environment rooms for the protection of certain immunosuppressed patients may be provided by the facility. Protective environment rooms shall be labeled "Protective Environment Room" on or adjacent to the anteroom side of the door between the isolation room and the anteroom. Protective environment rooms shall contain only one bed.*

1224.14.4.2 Anteroom doors. *Protective environment room (s) shall have self-closing and latching devices on all anteroom doors.*

1224.14.4.3 Anteroom. *A separate anteroom shall be provided between the protective environment room and the corridor, hallway or adjoining space which shall constitute the only entrance to the protective environment room. This anteroom shall have a handwashing station, work counter at least 3 feet (914 mm) long, cabinets and space to gown and to store clean and soiled materials. There shall be a view window from the anteroom to the protective environment room. There shall be means to allow for airflow from the protective environment room into the anteroom. Anteroom doors shall be aligned so that large equipment can be wheeled into the protective environment room. One anteroom may serve no more than one protective environment room.*

Exception: *Alternate designs for protective environment rooms, without individual anterooms, may be approved by the enforcement agency when it can be demonstrated that the alternate design meets the requirements of the California Mechanical Code and does not compromise or alter any health or fire protection component, assembly or system.*

1224.14.4.4 Adjoining toilet room. *Room shall meet the requirements of Section 1224.14.3.6.*

1224.14.4.5 Sealed-tight room. *Protective environment room perimeter walls, ceiling, floors, doors and penetrations shall be sealed tightly to minimize air infiltration from the outside or from other spaces.*

1224.14.5 Seclusion room(s). *If provided, the hospital shall provide one or more single bedrooms for patients needing close supervision for medical and/or psychiatric care. This may be part of the psychiatric unit described in Section 1224.31. If the single bedroom(s) is part of the acute-care nursing unit, the provisions of Section 1224.14.1 shall apply, with the following exceptions: each room shall be for single occupancy; each shall be located to permit staff observation of the entrance, preferably adjacent to the nurse station; and each shall be designed to minimize the potential for escape, hiding, injury or suicide. If vision panels are used for observation of patients, the arrangement shall insure patient privacy and prevent casual observation by visitors and other patients.*

1224.15 SURGICAL SERVICE SPACE.

1224.15.1 General. *The surgical service space shall be divided into two designated areas: 1) semi-restricted areas (e.g., storage areas for clean and sterile supplies, sterile processing rooms, scrub stations and corridors leading to restricted areas of the surgical suite, etc.); and 2) restricted areas (e.g., operating rooms, hybrid operating rooms, sterile procedure rooms, cardiac catheterization labs, sterile cores, etc.) that can be reached only through a semi-restricted area. The surgical service space shall be located and arranged to provide direct support from the anesthesia/recovery service space with a common door to prevent nonrelated traffic through the surgical service space.*

An operating room suite design with a sterile core shall provide for no cross traffic of staff and supplies from the decontaminated/soiled areas to the sterile/clean areas. The use of facilities outside the operating room for soiled/decontaminated processing and clean assembly and sterile processing shall be designed to move the flow of goods and personnel from dirty to clean/sterile without compromising universal precautions or aseptic techniques in either department.

The number of operating rooms and recovery beds, and the sizes of the support areas, shall be based on the expected surgical workload. Hospitals shall maintain at least the number of operating rooms in ratio to licensed bed capacity as follows:

Licensed Bed Capacity	Number of Operating Rooms
Less than 25	One
25 to 99	Two
100 or more	Three

For each additional 100 beds, and for each major fraction thereof, at least one additional operating room shall be maintained, unless approved to the contrary by the Department of Public Health. Required operating rooms are in addition to special operating rooms, cystoscopy rooms and fracture rooms which are provided by the hospital. Beds in a distinct-part skilled nursing service, intermediate care service or psychiatric unit shall be excluded from calculating the number of operating rooms required.

Exception: *Surgical service space is not required in a rural general acute care hospital, if the hospital maintains written transfer agreements with one or more general acute care hospitals that provide surgical and anesthesia services. Written transfer agreements shall be approved by the Department of Public Health, Licensing and Certification.*

1224.15.2 Surgery.

1224.15.2.1 General operating room(s). *Each room shall have a minimum clear floor area of 400 square feet (37.16 m^2) with a minimum of 20 feet (6096 mm) clear dimension between fixed cabinets and built-in shelves; and a system for emergency communication with the surgical service space control station. X-ray or imaging viewing capabilities shall be provided.*

Exception: *Where renovation of existing operating rooms is undertaken in facilities built under the 2001 or prior California Building Code, each operating room shall have a minimum clear floor area of 324 square feet (30.10 m^2) with a minimum of 18 feet (5486 mm) clear dimension between fixed cabinets and built-in shelves.*

1224.15.2.2 Procedure room(s). *Where a procedure room is provided, it shall comply with Section 1224.4.4.1.4 unless specified elsewhere.*

1224.15.2.2.1 Surgical cystoscopic and other endo-urologic procedures. *Each room shall have a minimum clear floor area of 250 square feet (23.23 m^2) with a minimum of 15 feet (4572 mm) clear dimension between fixed cabinets and built-in shelves. X-ray viewing and/or other imaging modality capabilities shall be provided*

Exception: *Where renovation of operating rooms is undertaken in facilities built under the 2001 or prior California Building Code rooms for surgical cystoscopy shall have a minimum clear floor area of 180 square feet (16.72 m^2). Cast rooms for open reductions, if provided, shall have a minimum clear floor area of 180 square feet (16.72 m^2), no dimension of which shall be less than 11 feet (3353 mm).*

1224.15.3 Service areas. *Services, except for the enclosed soiled workroom referenced in Section 1224.15.3.7 and the housekeeping room referenced in Section 1224.15.3.12, may be shared with the obstetrical facilities. Service areas, when shared with delivery rooms, shall be designed to avoid the passing of patients or staff between the operating room and the delivery room areas. The following shall be provided in support of the surgical service space:*

1224.15.3.1 Control station. *Control stations shall be located to permit visual observation of all traffic into the surgical service space. Staff locker rooms may be provided at a location with alternative controlled access.*

1224.15.3.2 Supervisor's office or station.

1224.15.3.3 Sub-sterile areas. *If provided within the surgery suite, a sub-sterile area(s) shall be equipped with a flash sterilizer, warming cabinet, countertop and handwashing station. If a sterilizing facility(ies) with high-speed sterilizer(s) or other sterilizing equipment for immediate or emergency use are provided, they shall be directly accessible from the operating room(s) it serves or shall be located inside the clean core if the clean core is directly accessible from the operating room(s). This room shall be accessible without traveling through any operating room. Other facilities for processing and sterilizing reusable instruments, etc., may be located in another hospital department such as central sterile supply.*

1224.15.3.4 Medication station. *A medication station shall be provided in accordance with Section 1224.4.4.4.*

1224.15.3.5 Scrub facilities. *Scrub sinks shall be located outside of sterile areas. A minimum of two scrub sinks shall be provided in a surgical unit containing one operating room. Four scrub sinks shall be provided in surgical units containing two operating rooms. One additional scrub sink shall be provided for each additional operating room. Scrub sinks shall have water supply controls not requiring direct contact of the hands for operation.*

1224.15.3.6 Clock. *A direct-wired or battery-operated clock or other equivalent timing device shall be visible from the scrub-up sinks.*

1224.15.3.7 Soiled workroom. *An enclosed soiled workroom (or soiled holding room that is part of a system for the collection and disposal of soiled material) for the exclusive use of the surgical service space shall be provided. The soiled workroom shall contain a flushing-rim clinical sink or equivalent flushing-rim fixture, a handwashing station, a work counter and space for waste receptacles and soiled linen receptacles. Rooms used only for temporary holding of soiled material may omit the flushing-rim clinical sink and work counters. However, if the flushing-rim clinical sink is omitted, other provisions for disposal of liquid waste shall be provided. The room shall not have direct connection with operating rooms. Soiled and clean utility room or holding rooms shall be*

separated. The soiled workroom shall provide 24 square feet (2.23 m^2) per operating room up to eight operating rooms and shall have a minimum area of 48 square feet (4.46 m^2), with no dimension less than 6 feet (1829 mm).

1224.15.3.8 Clean utility room. *This room shall not be used for food preparation.*

A clean utility room is required when clean materials are assembled within the surgical service space prior to use or following the decontamination cycle. It shall contain a work counter, a handwashing station, storage facilities for clean supplies and a space to package reusable items. The storage for sterile supplies must be separated from this space. If the room is used only for storage and holding as part of a system for distribution of clean supply materials, the work counter and handwashing station may be omitted. Soiled and clean utility rooms or holding rooms shall be separated.

1224.15.3.9 Anesthesia workroom. *Provide an anesthesia workroom for cleaning, testing and storing anesthesia equipment. This room shall contain work counter(s) and sink(s) and racks for cylinders.*

1224.15.3.10 Equipment storage room(s) for equipment and supplies used in surgical service space. *Each surgical service space shall provide sufficient storage area to keep its required corridor width free of equipment and supplies, but not less than 150 square feet (13.94 m^2) or 50 square feet (4.65 m^2) per operating room, whichever is greater.*

1224.15.3.11 Staff clothing change areas. *Appropriate areas shall be provided for male and female staff working within the surgical service space. The areas shall contain lockers, showers, toilets, handwashing stations and space for donning surgical attire. These areas shall be arranged to ensure a traffic pattern so that personnel entering from unrestricted area outside the surgical service space enter, change their clothing and move directly into the surgical service space semi-restricted corridor.*

1224.15.3.12 Housekeeping room. *Shall be provided for the exclusive use of the surgical service space. It shall be directly accessible from the service space.*

1224.16 ANESTHESIA/RECOVERY SERVICE SPACE.

1224.16.1 General*. The anesthesia/recovery service space shall provide perioperative support services to the surgical service space as required under this section. Perioperative services shall include preoperative patient care and post-operative recovery with a Post-Anesthesia Care Unit (PACU). The anesthesia/recovery service space shall be located adjacent to the surgical service space with direct access to the surgical suite's semi-restricted corridor.*

Exception: *In a rural general acute care hospital, when the surgical service space is not provided, the anesthesia service space is not required. The hospital must maintain written transfer agreements with one or more general acute care hospitals that provide surgical and anesthesia services. Written transfer agreements shall be approved by the Department of Public Health, Licensing and Certification.*

1224.16.2 Preoperative patient holding area(s). *In facilities with two or more operating rooms, area(s) with patient care stations shall be provided to accommodate gurney patients or sitting space for ambulatory patients not requiring gurneys. The preoperative area is an unrestricted area and shall be under the direct visual control of the nursing staff and may be part of the recovery space. If the preoperative patient care area will serve other purposes, such as overflow PACU or holding area, applicable requirements in Section 1224.16.3 PACU shall be met.*

1224.16.2.1 Space requirements. *Each station shall have a minimum clear floor area of 80 square feet (7.43 m^2) and a minimum clearance of 3 feet (914 mm) shall be provided between the sides and foot of patient lounge chairs/gurneys and adjacent walls, partitions or fixed elements. A minimum width of 6 feet (1829 mm) of access/circulation outside the curtain shall be provided.*

1224.16.2.2 Patient privacy. *Provisions for patient privacy such as cubicle curtains shall be made.*

1224.16.2.3 Handwashing stations. *Handwashing station(s) shall be provided in the preoperative service area at a ratio of one for each 4 stations, and for each major fraction thereof, in open bay areas. A handwashing station shall be provided in each single care station room.*

1224.16.3 Recovery and Post-Anesthesia Care Unit (PACU). *The recovery area and Post-Anesthesia Care Unit is an unrestricted area and located such that at least one door to the recovery room shall provide access directly from the surgical service space without crossing unrestricted corridors. A minimum of 1.5, or major fraction thereof, post-anesthesia care stations per operating room shall be provided. If pediatric surgery is provided, pediatric recovery stations shall be provided. They shall be separate from adult stations, and shall include space for family or visitors and be visible from the nurse station.*

1224.16.3.1 Space requirements. *A minimum of 4 feet (1218 mm) clearance shall be provided between the sides and the foot of patient gurneys or beds and adjacent walls or other fixed elements. A minimum clear floor area of 80 square feet (7.43 m^2) shall be provided for each station in an open-bay plan. A minimum clearance of 5 feet (1524 mm) shall be provided between sides of gurneys or beds, and a minimum of 3 feet (914 mm) clearance shall be provided between the foot of the gurney or bed, to a closed cubicle curtain. A minimum width of 6 feet (1829 mm) of access/circulation outside the curtain shall be provided. See Patient Bay under Patient Care Locations in Section 1224.3.*

1224.16.3.2 Patient privacy. *Provisions for patient privacy such as cubicle curtains shall be made.*

1224.16.3.3 Handwashing stations. *Handwashing stations shall be provided in the post-anesthesia care unit with at least one for every four patient positions, and for each major fraction thereof, uniformly distributed to provide equal access from each patient station. A handwashing station shall be provided in each single care station room.*

1224.16.4 Reserved.

1224.16.5 Support areas for patient care.

1224.16.5.1 Nurse station. *A nurse station shall be provided in postoperative patient care areas, and shall allow direct observation of the patients and charting facilities. The nurse station shall comply with the requirements of Section 1224.4.4.2.*

1224.16.5.2 Clinical sink. *A clinical sink shall be provided in postoperative patient care areas with provisions for bedpan cleaning.*

1224.16.5.3 Medication station. *Each Post-Anesthesia Care Unit shall contain a medication station. The medication station shall comply with the requirements of Section 1224.4.4.4.*

1224.16.5.4 Ice-making. *Ice-making equipment shall be provided in the perioperative service space. Ice-making equipment is permitted to be located in preoperative or postoperative patient care areas, however, it shall not be located in semi-restricted areas.*

1224.16.5.5 Storage. *Storage shall be provided for gurneys, supplies and equipment.*

1224.16.6 Support areas for staff*. Staff toilet rooms shall be immediately accessible to the postoperative patient care area(s) to maintain staff availability to patients.*

1224.16.7 Support areas for patients, families and visitors.

1224.16.7.1 Waiting area. *A waiting area, in compliance with Section 1224.4.5, shall be provided.*

1224.16.7.2 Patient change area. *A changing area shall be provided for outpatient use in perioperative areas in support of surgical suites that provide outpatient procedures. The changing area shall include space for changing or gowning, provisions for storing patients' belongings during the procedure, and access to patient toilet(s).*

1224.17 CLINICAL LABORATORY SERVICE SPACE.

1224.17.1 General requirements. *All hospitals shall provide space and equipment to perform urinalysis, complete blood counts, hemoglobin blood typing and cross matching. If laboratory facilities for bacteriological, serological, pathological and additional hematological procedures are not available in the community, then space, equipment and supplies for such procedures shall be provided.*

1224.17.2 Laboratory work areas. *The following laboratory work areas shall be provided:*

1224.17.2.1 Laboratory workstation(s). *Space shall be provided to accommodate equipment used and, at minimum, shall include a laboratory work counter and a sink. All work counter(s) in areas used for specimen handling, preparation of specimens or reagents, and laboratory testing shall be constructed of nonporous materials. Access to the following shall be provided as required:*

1. *Tele/data service.*
2. *Electrical service.*
3. *Computer/printer.*

1224.17.2.2 Handwashing station(s).

1224.17.2.2.1. *If there is one work station, a handwashing station shall be provided at the workstation.*

1224.17.2.2.2. *If more than one work station is provided, a handwashing station shall be provided within 25 feet (762 mm) of all testing and specimen-handling areas.*

1224.17.2.2.3. *A handwashing station shall be provided in each enclosed room where bio-hazardous specimens and/or hazardous chemicals are handled.*

1224.17.2.3 Refrigerated storage facilities. *Refrigerated blood storage facilities for transfusions shall be provided. Blood storage refrigerators shall be equipped with temperature-monitoring and alarm signals that are monitored continuously.*

1224.17.2.4 Storage facilities.

1. *Storage for reagents, specimens, flammable materials, acids, bases and other supplies shall be provided as necessary.*
2. *Separate facilities shall be provided for such incompatible materials as acids and bases.*
3. *Vented storage shall be provided for volatile solvents.*

1224.17.2.5 Terminal sterilization. *Facilities and equipment may be provided for terminal sterilization of bio-hazardous waste before transport (autoclave or electric oven).*

Notes:

1. *Terminal sterilization is not required for waste that is incinerated on-site.*
2. *Terminal sterilization is subject to other state and federal regulatory requirements.*

Exception: *Terminal sterilization facilities are not required when it can be demonstrated to the licensing agency that transport and terminal sterilization can be effectively contracted to an independent medical waste treatment facility.*

1224.17.2.6 Radioactive material handling. *If radioactive materials are employed, facilities for long-term storage and disposal of these materials shall be provided.*

1224.17.3 Specimen collection facilities.

1224.17.3.1 General. *Space shall be provided for specimen collection. Facilities for this function shall be located outside the laboratory work area.*

1224.17.3.2 Facility requirements. *At a minimum, specimen collection facilities shall have the following:*

1. *A blood collection area with a work counter, space for patient seating, handwashing station(s) and supply storage.*
2. *A urine and feces collection facility equipped with a toilet and a handwashing station.*
3. *Storage spaces for specimen collection supplies.*
4. *Work counters for labeling and computerized data entry.*
5. *Storage for specimens awaiting pickup.*

1224.17.4 Administrative areas. *Office(s) and space for clerical work, filing and record maintenance and storage shall be provided.*

1224.18 RADIOLOGICAL/DIAGNOSTIC IMAGING SERVICE SPACE. *Space and equipment shall be provided to accommodate all required elements, and any additional imaging modalities included in the service space, as required in this section. To differentiate the design and construction requirements needed to achieve the environmental controls and other requirements that support the amount of intervention to be provided, imaging rooms shall be classified as described in Table 1224.4.11.4a (Examination/Treatment, Imaging, Procedure and Operating Room Classification). Where an imaging room will be used for Class 1 and Class 2 procedures, the more stringent requirements for the higher class room shall apply. Where imaging procedures meeting Class 3 criteria are performed, rooms that meet the requirements for the applicable imaging suite and for an operating room per Section 1224.15.2.1 or hybrid operating room per Section 1224.28.5 shall be provided. If Class 3 interventional or image-guided procedures are performed in the imaging services area, additional provisions shall be as described in Section 1224.28 Supplemental Surgery and other Special Procedure Services. If nuclear medicine is provided in the imaging services area, spaces shall also comply with the requirements described in Section 1224.34 Nuclear Medicine.*

1224.18.1 Minimum requirements. *Hospital shall provide a minimum of:*

1. *One fluoroscopy room or CT room on approval of Licensing Agency, which can also provide x-ray examination services.*
2. *Space for processing or viewing images.*
3. *A toilet room shall adjoin and be directly accessible to each fluoroscopy room. In addition to the fluoroscopy toilet rooms, common patient toilet room facilities shall be located in the radiological/diagnostic imaging service space.*
4. *An office or other suitable area for viewing and reporting radiographic examination.*
5. *Storage spaces for all image equipment, supplies and copies of reports.*
6. *Handwashing stations located within the unit.*
    a) *Handwashing station(s) shall be provided within the unit to serve imaging spaces not served by a dedicated hand-washing station within the imaging room or scrub facility located directly outside the imaging/procedure room.*
    b) *A handwashing station shall be provided in Class 1 imaging rooms, unless specified otherwise for a specific imaging modality.*
    c) *A handwashing station or hand scrub facility shall be provided for Class 2 imaging rooms. If a handwashing station is provided, it shall be directly accessible to the imaging room. If a hand scrub facility is provided, it shall be directly outside the entrance to the imaging room.*
    d) *Hand scrub facilities shall be provided directly outside the entrance to a Class 3 imaging room.*
7. *Dressing room facilities.*

1224.18.1.1 Radiation protection. *A certified physicist or other qualified expert shall specify the type, location and amount of radiation protection to be installed in accordance with the final approved department layout and equipment selections. Where protected alcoves with view windows are required, a minimum of 1'-6" (0.45 meter) between the view window and the outside partition edge shall be provided. Radiation protection requirements shall be incorporated into the construction documents and comply with Chapter 31C and the requirements of California Radiation Control Regulations, California Code of Regulations, Title 17, Division 1, Chapter 5 and Subchapter 4.*

1. *The control alcove or room shall be, at minimum, sized and configured in compliance with the manufacturer's recommendations for installation, service and maintenance.*
2. *A control alcove or room shall be permitted to serve more than one imaging room, provided the manufacturer's recommendations for installation, service and maintenance are accommodated for all rooms served.*
3. *The control alcove or room shall include a shielded view window, as specified in the physicist's report, designed to provide a full view of the examination/procedure table and the patient at all times, including a full view of the patient during imaging activities (e.g., when the table is tilted or the chest x-ray is in use).*
4. *The control room shall be physically separated from a Class 2 or Class 3 imaging room with walls and a door.*
5. *Where an imaging room requires positive (or negative) pressure, a door shall be provided between the control room and the imaging room.*

1224.18.1.2 Multiple-modality devices. *Where two or more individual imaging or therapy modalities are integrated into one imaging device (e.g., PET/CT, SPECT/CT or PET/MRI), the minimum requirements for that room shall include the criteria for each individual contributing modality. Refer to Section 1224.34 for modalities not included under Section 1224.18.*

1224.18.2 Angiography. *If provided, diagnostic angiography space shall accommodate the following:*

1. *A control room with a view window to permit full view of the patient.*
2. *A scrub sink located outside the staff entry to the procedure room.*

3. *Patient holding area shall accommodate at least one patient gurney with a minimum of 3-foot (914 mm) clearance on the long side.*
4. *Storage for portable equipment and catheters shall be provided.*

1224.18.2.1 Interventional angiography procedures. *If interventional angiography procedures are to be performed in the angiography room, the suite shall comply with interventional imaging requirements in Section 1224.28.4. If cardiac catheterization procedures are performed refer to Section 1224.28.2.*

1224.18.3 Computerized tomography (CT) scanning. *If provided, CT space shall accommodate the following:*

1224.18.3.1 Spaces required. *If provided, CT scan spaces shall accommodate the equipment with a minimum of 3 feet (914 mm) on the sides and foot of the equipment as well as required service clearance at the rear, together with the following:*

1. *A control room or alcove shall be provided that is designed to accommodate the computer and other controls for the equipment. A view window shall be provided to permit view of the patient.*
2. *A patient toilet room readily accessible to the procedure room.*

1224.18.3.2 Intraoperative computerized tomography. *If provided, intraoperative CT scanning spaces shall comply with Section 1224.28.5.*

1224.18.4 Magnetic resonance imaging (MRI). *If provided, the MRI room shall accommodate the equipment with a minimum of 3 feet (914 mm) on all sides of the equipment, together with the following:*

1. *A control room shall be provided with full view of the patient in the MRI scanner. The control console shall be positioned so the operator has a full view of the approach and entrance to the MRI scanner room.*
2. *An anteroom or area visible from the control room shall be located outside the MRI scanner room so that patients, health care personnel and other employees must pass through it before entering the scanning area and control room. The room or area shall be outside the restricted areas of the MRI's magnetic field.*
3. *Safety Zones One through Four shall be identified.*
   a) *Zone One consists of all areas freely accessible to the general public. This zone includes the entrance to the MR facility.*
   b) *Zone Two acts as a buffer between Zone One and the more restrictive Zone Three. Patients are under the general supervision of MR personnel. Zone Two may include the reception area, dressing room and interview room.*
   c) *Zone Three should be restricted by a physical barrier. The MR control room and/or computer room are located within Zone Three.*
   d) *Zone Four is strictly the area within the walls of the MR scanner room. Access into the MR scanner room should only be available by passing through Zone Three.*
4. *An imaging equipment room shall be provided if needed for the operation of the MRI.*

1224.18.4.1 Handwashing station. *Handwashing station(s) shall be immediately accessible to the MRI scanner room.*

1224.18.4.2 Wall, floor and ceiling assemblies. *Wall, floor and ceiling assemblies shall accommodate the installation of required radio frequency (RF)-shielded assemblies. All doors, windows and penetrations into the RF-shielded enclosure shall be RF-shielded. As well as RF shielding, individual sites may also require magnetic shielding on some or all surfaces to contain portions of the magnetic field not contained by the RF shield.*

1224.18.4.3 Lighted sign. *MRI rooms shall be clearly marked with a red light and lighted sign stating, "The Magnet Is On". This light and sign are to be lighted at all times and have a backup energy source to remain illuminated for at least 24 hours in the event of a loss of power.*

1224.18.4.4 Magnetic field strength identification. *Facilities shall use finishes or markings to identify the critical values of the magnetic field surrounding the MRI scanner, including the 5-gauss exclusion zone or other magnetic field strength values that may impair the operation of equipment.*

1224.18.4.5 Special ventilation requirements. *Where superconducting MRI scanners are installed, an insulated cryogen quench exhaust pipe as well as room exhaust and pressure equalization shall be provided to protect occupants in the event of a cryogen breach.*

1224.18.4.6 Intraoperative magnetic resonance imaging. *If provided, the intraoperative magnetic resonance imaging (iMRI) suite shall comply with Section 1224.28.5.*

1224.18.5 Ultrasound. *When provided, the ultrasound room shall comply with the following:*

1224.18.5.1 Space requirements.

1. *Area. Rooms used for ultrasound examination/treatment shall have a minimum clear floor area of 120 square feet (11.15 m^2).*
2. *Clearances. A minimum clear dimension of 3 feet (914 mm) shall be provided on three sides of the table/stretcher.*

1224.18.5.2 Handwashing station. *A handwashing station shall be provided within the exam room.*

1224.18.5.3 Patient toilet(s). *A patient toilet shall be directly accessible to the ultrasound exam room. The patient toilet may be permitted to serve more than one ultrasound exam room. If exams performed are limited to cardiology, vascular, breast ultrasound or used only for image guided procedures, then the toilet is not required to have direct access.*

1224.18.5.4 Processing room. *If provided, a processing room shall contain distinct areas for cleaning and decontaminating instruments. The cleaning area shall provide for flow of instruments from the contaminated area to the clean area and then to storage.*

1224.18.5.4.1 *The decontamination area shall be equipped with the following:*

1. *One freestanding handwashing station.*
2. *Work counter space(s).*
3. *Separate storage room or cabinets for HLD probes.*

1224.18.6 Mammography. *When provided, the mammography room shall comply with the following:*

1224.18.6.1 Space requirements.

1. *Area. Mammography rooms shall be a minimum of 100 square feet (9.3 m^2).*
2. *Shielded alcove. Each x-ray room shall include a shielded control alcove. For mammography machines with built-in shielding for the operator, omission of the alcove shall be permitted when approved by the certified physicist.*

1224.18.6.2 Handwashing station*. A handwashing station shall be provided within the procedure room.*

1224.18.7 Support spaces. *The following spaces are common to the imaging service area and are minimum requirements unless stated otherwise:*

1224.18.7.1 Patient's toilet room(s). *In service spaces with procedure rooms that do not have dedicated patient toilets, provide a minimum of one patient toilet room within the service space.*

1224.18.7.2 Patient dressing areas. *Dressing areas shall be provided adjacent to the imaging rooms.*

1224.18.7.3 Staff facilities. *In service space of three or more procedure rooms, staff toilet room(s) internal to the service space shall be provided.*

1224.18.7.4 Film storage (active). *If film systems are used, provide the following:*

1. *A room with cabinet or shelves for filing patient film for immediate retrieval shall be provided.*
2. *Storage facilities for unexposed film which shall include protection of film against exposure or damage.*

1224.18.7.5 Locked storage. *Provision shall be made for locked storage of medications and drugs.*

1224.19 PHARMACEUTICAL SERVICE SPACE.

1224.19.1 General. *Facilities shall be provided to accommodate services and equipment associated with the drug distribution system used, the number of patients to be served, and the extent of shared or purchased services as licensed by the California Board of Pharmacy. Hospital pharmacies shall comply with the requirements of Section 1250 and include the functional spaces under Sections 1224.19.2 through 1224.19.7. Exempt hospitals shall provide a drug room and the supporting spaces, in compliance with Section 1224.19.1.2.*

1224.19.1.1 Licensed pharmacy. *All hospitals having a licensed capacity of 100 or more beds shall have a pharmacy on the premises licensed by the California Board of Pharmacy.*

Note: *See General Acute Care Hospitals §70263(a), Article 3, Chapter 1, Division 5, Title 22, California Code of Regulations, for requirements concerning hospitals with fewer than 100 beds. The pharmacy room or service space shall conform to the requirements of § 1751, Article 7, Division 17, Title 16, California Code of Regulations as enforced by the California Board of Pharmacy.*

1224.19.1.2 Less than 100-bed exemption. *Hospitals under a Hospital Pharmacy Permit Exemption issued by the Board of Pharmacy, associated with Business and Professions Code Section 4056, shall provide all basic pharmaceutical services in compliance with Section 1224.19.1.2.*

1224.19.1.2.1 Drug room. *Licensed pharmaceutical space with drug distribution shall be under the supervision of a physician and be monitored by a pharmacist consultant. The drug room shall include the following:*

1224.19.1.2.1.1. *A room or area for receiving, breakout and inventory control of drugs used in the hospital.*

1224.19.1.2.1.2. *Cleanable work counters and space for automated and/or manual dispensing activities.*

1224.19.1.2.1.3. *Reserved.*

1224.19.1.2.1.4. *An area for reviewing and recording.*

1224.19.1.2.1.5. *An area for storage, exchange and restocking of carts.*

1224.19.1.2.1.6. *Security provisions for drugs and personnel in the dispensing counter area.*

1224.19.1.2.2 Handwashing station. *A hand-washing station shall be provided in the area where medication(s) are handled or be immediately accessible, without going through a door unless the door is equipped with hands-free operation.*

1224.19.1.2.3 Storage. *Cabinets, shelves and/or separate rooms or closets shall be provided for the following:*

1224.19.1.2.3.1. *Bulk storage.*

1224.19.1.2.3.2. *Active storage.*

1224.19.1.2.3.3. *Refrigerated storage.*

1224.19.1.2.3.4. *Storage for volatile fluids and alcohol in accordance with applicable fire safety codes for the substances involved.*

1224.19.1.2.3.5. *Secured lockable storage for controlled drugs.*

1224.19.1.2.3.6. *Equipment and supply storage for general supplies and equipment not in use.*

1224.19.2 Pharmacy areas.

1224.19.2.1 Dispensing facilities. *Hospital pharmacies shall provide the following areas for patient-specific compounding and dose repackaging of non-sterile preparations.*

1224.19.2.1.1 Receiving. *A room or area for receiving, breakout and inventory control of materials used in the pharmacy.*

1224.19.2.1.2 Dispensing. *Work counters and space for automated and/or manual dispensing activities shall be provided to serve the volume of doses per day for in-patient and out-patient needs.*

1224.19.2.1.3 Non-sterile compounding areas. *An extemporaneous compounding/dose repackaging area shall be located next to bulk storage and include the following:*

1224.19.2.1.3.1 Size. *Work stations shall have sufficient counter space for drug preparation.*

1224.19.2.1.3.2 Handwashing station. *Handwashing station(s) shall be in or immediately accessible to all areas where pharmaceuticals are handled without going through a door unless the door is equipped with hands-free operation.*

1224.19.2.1.3.3 Utility sink. *A utility sink shall be provided.*

1224.19.2.1.3.4. *If carousel or analogous robotic technologies are used, the area shall respond to the special system requirements.*

1224.19.2.1.4 Recording. *An area for reviewing and recording shall be provided. The area shall include counter space and electronic workstation(s).*

1224.19.2.1.5 Temporary storage. *An area for temporary storage, exchange and restocking of carts.*

1224.19.2.1.6 Security. *Security provisions shall be provided for drugs and personnel in the dispensing counter area.*

1224.19.2.2 Reserved.

1224.19.2.3 Storage. *The following storage facilities shall be provided in the pharmaceutical service area.*

1224.19.2.3.1 Bulk storage. *A separate bulk storage area, or room, may be provided.*

1224.19.2.3.2 Active storage. *Active storage in support of repackaging and dispensing activities shall be provided.*

1224.19.2.3.3 Refrigerated storage. *Refrigeration/freezer area shall be provided.*

1224.19.2.3.4 Hazardous materials. *Storage for volatile fluids and alcohol shall comply with Section 307.*

1224.19.2.3.5 Secured storage. *Secured lockable storage shall be provided for narcotics and controlled drugs.*

1224.19.2.3.6 Equipment and supplies. *Equipment and supply storage for general supplies and equipment not in use.*

1224.19.2.3.7 Hazardous drug (HD) storage. *Where hazardous drugs are stored outside of an HD buffer room or HD segregated compounding area, an HD storage room under negative pressure and externally ventilated per the California Mechanical Code shall be provided. Hazardous drugs must be stored in a manner that prevents spillage, breakage or falling from shelves. Hazardous drugs shall not be stored on the floor. Refrigerated hazardous drugs must be stored in a dedicated refrigerator located in the Hazardous buffer room, hazardous segregated compounding area or hazardous storage room.*

1224.19.3 Sterile compounding areas.

1224.19.3.1 General. *If sterile compounding areas are provided, the requirements in this section shall be met. Buffer rooms (also known as clean rooms) and their anterooms, and Segregated Compounding Areas (SCA) are classified as semi-restricted areas. The pharmacy shall be laid out to preclude unrelated traffic to hazardous and nonhazardous preparation rooms. The buffer room, anteroom and SCA must be separated from areas not directly related to compounding and must be appropriately controlled to achieve and maintain required air quality classifications. A monitoring system shall be used in a cleanroom suite to continuously monitor the pressure differential between the anteroom(s) and buffer room(s) and between the ante-room and the general pharmacy area. Sterile compounding areas in hospitals shall comply with Sections 1735 and 1751 in Article 4.5 of Division 17 of Title 16 of the California Code of Regulations and US Pharmacopeia (USP) Chapters 797 and 800, and the requirements in this section.*

Note: *Where robotic systems are used in the preparation of IV solutions in either the positive pressure nonhazardous preparation room or the negative pressure hazardous prep room, the robotics shall be separate systems and not pass through from one area to the other.*

1224.19.3.2 Nonhazardous sterile preparation area. *If IV solutions are prepared in the pharmacy, a sterile compounding work area with a laminar airflow workstation designed for product protection shall be provided in accordance with Title 16, Section 1735, and USP Chapter 797 and include the following.*

1224.19.3.2.1 Workstation. *The Primary Engineering Control (PEC) shall be a laminar airflow work bench or isolator (CAI) as required. The workstation shall have a visible pressure gauge for detection of filter leaks or defects. All exposed sides of the workstation shall be accessible for cleaning and allow for reach behind the unit if not built against a wall. If built against a wall, the space behind the unit shall be sealed to prevent intrusion of moisture, contaminants and bacteria growth.*

1224.19.3.2.2 Buffer room. *Workstations shall be located in a Secondary Engineering Control (SEC) room. The SEC shall be a buffer/clean room, with the following requirements:*

1224.19.3.2.2.1 Air quality. *Nonhazardous buffer rooms shall be sealed tight, and be under positive pressure relative to the anteroom. Air supply shall be laminar airflow with a low-level return. Refer to California Mechanical Code Table 4A, Title 16 Section 1735 and USP Chapter 797 for additional requirements.*

1224.19.3.2.2.2 Finishes. *The buffer room is considered a semi-restricted area with non-porous and cleanable surfaces, ceilings, walls and floors subject to wet cleaning. The surfaces of ceilings, walls, floors, fixtures, shelving, work surfaces, counters and cabinets shall be smooth, seamless, impervious, free from cracks and crevices and be non-shedding. Ceilings shall be monolithic or utilize cleanroom style scrubbable panels, able to withstand cleaning with chemicals. If ceilings consist of inlaid panels, the panels must be caulked around each panel to seal them to the support frame. Junctures of ceilings to walls shall be coved or caulked to avoid cracks and crevices where dirt can accumulate. Sprinkler systems shall be recessed, covered, easily cleanable and of a type suitable for a cleanroom environment. Wall finishes shall be 2-coat epoxy-covered gypsum board, seamless vinyl or other impervious covering. Work surfaces, shelving and cabinets shall be constructed of smooth, impervious materials, such as stainless steel or molded plastic, so that they are easily cleaned and disinfected. Plastic laminate finish over a pervious substrate is not permitted.*

1224.19.3.2.2.3 Eyewash station. *If provided in the buffer room, the eyewash station shall be located just inside the door from the anteroom, and must be dry, unless in use. Drains are not permitted in the buffer room.*

1224.19.3.2.2.4 Sealed tight room. *Room perimeter walls, ceiling, floors, doors and penetrations shall be sealed tightly to minimize air infiltration from the outside or from other rooms. Buffer room doors shall be glass, metal or other phenolic material, self-closing and with hands-free door operation. Normal operation may include automatic door controls sequencing such that only the buffer room door or the anteroom door is open at one time. Egress provisions shall not be impeded.*

1224.19.3.2.2.5 Pass-throughs. *If a pass-through is used, both doors shall not be capable of being open at the same time, and the doors should be interlocking.*

1224.19.3.2.3 Anteroom. *Nonhazardous buffer rooms shall be accessed through an anteroom with the following requirements:*

1224.19.3.2.3.1 Size. *The anteroom shall be of adequate size to accommodate a demarked area for donning and doffing, and anticipated staging of carts and supplies. The minimum size for the anteroom is 120 square feet (11.15 m^2).*

Note: *A common anteroom may be shared between hazardous and nonhazardous buffer rooms. The anteroom must comply with both 1224.19.3.2.3 and 1224.19.3.3.3, provide a minimum of 5 feet (1524 mm) between the buffer room doors, and provide automatic door controls sequencing such that only one of the buffer room doors may be open at one time. Egress provisions shall not be impeded.*

1224.19.3.2.3.2 Air quality. *Nonhazardous ante-rooms shall be under negative pressure relative to the buffer room and positive pressure relative to nonrestricted areas. Refer to California Mechanical Code Table 4A, Title 16 Section 1735 and USP Chapter 797 for additional requirements.*

1224.19.3.2.3.3 Handwashing station. *A handwashing station, with hands-free controls and nonrefillable closed soap dispensing system, providing support for scrubbing up to the elbows, shall be located in or adjacent to the anteroom.*

1224.19.3.2.3.4 Eyewash station. *An eyewash station shall be provided in the anteroom if one is not provided in the buffer room.*

1224.19.3.2.3.5 Housekeeping. *Dedicated environmental services, materials and supplies for the buffer room and the anteroom shall be located in the anteroom.*

1224.19.3.2.3.6 Finishes. *The anteroom room is considered a semi-restricted area with non-porous and cleanable surfaces, ceilings, walls and floors subject to wet cleaning. The surfaces of ceilings, walls, floors, fixtures, shelving, work surfaces, counters and cabinets shall be smooth, seamless, impervious, free from cracks and crevices and be non-shedding. Ceilings shall be monolithic or utilize cleanroom style scrubbable panels, able to withstand cleaning with chemicals. If ceilings consist of inlaid panels, the panels must be caulked around each panel to seal them to the support frame. Junctures of ceilings to walls shall be coved or caulked to avoid cracks and crevices where dirt can accumulate. Sprinkler systems shall be recessed, covered, easily cleanable and of a type suitable for a cleanroom environment. Wall finishes shall be 2-coat epoxy-covered gypsum board, seamless vinyl or other impervious covering. Work surfaces, shelving and cabinets shall be constructed of smooth, impervious materials, such as stainless steel or molded plastic so that they are easily cleaned and disinfected. Plastic laminate finish over a pervious substrate is not permitted.*

1224.19.3.2.3.7 Sealed tight room. *Room perimeter walls, ceiling, floors, doors and penetrations shall be sealed tightly to minimize air infiltration from the outside or from other rooms. Buffer room doors shall be glass, metal or other phenolic material, self-closing and with hands-free door operation.*

1224.19.3.2.4 Segregated Compounding Area (SCA). *When provided in lieu of a buffer/clean room and anteroom, a segregated compounding area, with a limitation on permitted compounded sterile preparations and allowable time of use, shall comply with the requirements of Title 16, Section 1735 and USP Chapter 797. The SCA shall include the PEC and extend to a line of demarcation between the PEC and other surrounding areas with a minimum clearance of 3.281 feet (1 meter) between the PEC and the line of demarcation.*

1224.19.3.2.4.1 Air quality. *Nonhazardous Segregated Compounding Areas shall provide airflow from clean to less clean areas. Refer to California Mechanical Code Table 4A, Title 16 Section 1735 and USP Chapter 797 for additional requirements.*

1224.19.3.2.4.2 Handwashing station. *A handwashing station, with hands-free controls and nonrefillable closed soap dispensing system, providing support for scrubbing up to the elbows, shall be located in or adjacent to the SCA with a minimum clearance of 3.281 feet (1 meter) between the rim of the sink and the PEC.*

1224.19.3.2.4.3 Finishes. *The segregated compounding area is considered a semi-restricted area with nonporous and cleanable surfaces, ceilings, walls and floors subject to wet cleaning. The surfaces of ceilings, walls, floors, fixtures, shelving, work surfaces, counters and cabinets shall be smooth, seamless, impervious, free from cracks and crevices and be non-shedding. Ceilings shall be monolithic or utilize cleanroom style scrubbable panels, able to withstand cleaning with chemicals. If ceilings consist of inlaid panels, the panels must be caulked around each panel to seal them to the support frame. Junctures of ceilings to walls shall be coved or caulked to avoid cracks and crevices where dirt can accumulate. Sprinkler systems shall be recessed, covered and easily cleanable. Wall finishes shall be 2-coat epoxy-covered gypsum board, seamless vinyl or other impervious covering. Work surfaces, shelving and cabinets shall be constructed of smooth, impervious materials, such as stainless steel or molded plastic so that they are easily cleaned and disinfected. Plastic laminate finish over a pervious substrate is not permitted.*

1224.19.3.3 Hazardous drug (HD) sterile preparation room. *If hazardous drugs are used in compounding activities, a separate room shall be provided for preparation of hazardous admixtures in accordance with Title 16, Sections 1735 and 1751 and USP Chapters 797 and 800.*

1224.19.3.3.1 Workstation. *The Primary Engineering Control (PEC) shall be a negative pressure biological safety cabinet or isolator (CACI) as required. The workstation shall have an exhaust to the outside with a visible pressure gauge for detection of filter leaks or defects. All exposed sides of the workstation shall be accessible for cleaning and allow for reach behind the unit if not built against a wall. If built against a wall, the space behind the unit shall be sealed to prevent intrusion of moisture, contaminants and bacteria growth.*

1224.19.3.3.2 Hazardous buffer room. *Workstations shall be located in a Secondary Engineering Control (SEC) room. The SEC shall be a buffer/clean room, with the following requirements:*

1224.19.3.3.2.1 Reserved.

1224.19.3.3.2.2 Air quality. *Hazardous buffer rooms shall be sealed tight and be under negative pressure relative to the anteroom. Air supply shall be laminar airflow with a low-level return. Refer to California Mechanical Code Table 4A, Title 16 Section 1751 and USP Chapter 800 for additional requirements.*

1224.19.3.3.2.3 Finishes. *The buffer room is considered a semirestricted area with nonporous and cleanable surfaces, ceilings, walls and floors subject to wet cleaning. The surfaces of ceilings, walls, floors, fixtures, shelving, work surfaces, counters and cabinets shall be smooth, seamless and impervious, free from cracks and crevices and be nonshedding. Ceilings shall be monolithic or utilize cleanroom style scrubbable panels, able to withstand cleaning with chemicals. If ceilings consist of inlaid panels, the panels must be caulked around each panel to seal them to the support frame. Juncture of ceilings to wall shall be coved or caulked to avoid cracks and crevices where dirt can accumulate. Sprinkler systems shall be recessed, covered, easily cleanable and of a type suitable for a cleanroom environment. Wall finishes shall be 2-coat epoxy covered gypsum board, seamless vinyl or other impervious covering. Work surfaces, shelving and cabinets shall be constructed of smooth, impervious materials, such as stainless steel or molded plastic so that they are easily cleaned and disinfected. Plastic laminate finish over a pervious substrate is not permitted.*

1224.19.3.3.2.4 Eyewash station. *If provided in the buffer room, the eyewash station shall be located just inside the door from the anteroom, a minimum clearance of 3.281 feet (1 meter) from the PEC, and must be dry, unless in use. Drains are not permitted in the buffer room.*

1224.19.3.3.2.5 Refrigerator. *Refrigerated storage may be provided in the negative pressure buffer room. Clearance around the refrigerator shall be accessible for cleaning.*

1224.19.3.3.2.6 Doffing area. *An area for doffing with a hamper shall be demarked inside the buffer/clean room at the door to the anteroom.*

1224.19.3.3.2.7 Sealed tight room. *Room perimeter walls, ceiling, floors, doors and penetrations shall be sealed tightly to minimize air infiltration from the outside or from other rooms. Buffer room doors shall be glass, metal or other phenolic material, self-closing and with hands-free door operation. Normal operation may include automatic door controls sequencing such that only the buffer room door or the anteroom door is open at one time. Egress provisions shall not be impeded.*

1224.19.3.3.2.8 Pass-throughs. *If a pass-through is used between the buffer and anteroom, both doors should not be capable of being open at the same time, and the doors should be interlocking. A refrigerator pass-through shall not be used.*

1224.19.3.3.2.9 Housekeeping. *Dedicated environmental services, materials and supplies shall be located in the buffer room.*

1224.19.3.3.3 Anteroom. *Hazardous buffer rooms shall be accessed through an anteroom with the following requirements:*

1224.19.3.3.3.1 Size. *The anteroom shall be of adequate size to accommodate a demarked area for donning and doffing, and anticipated staging of carts and supplies.*

Note: *A common anteroom may be shared between hazardous and nonhazardous buffer rooms. Refer to note under Section 1224.19.3.2.3.1.*

1224.19.3.3.3.2 Air quality. *Hazardous ante-rooms shall be under positive pressure relative to the buffer room and positive pressure relative to nonrestricted areas. Refer to California Mechanical Code Table 4A, Title 16 Section 1751 and USP Chapter 800 for additional requirements.*

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1224.19.3.3.3.3 Handwashing station. *A handwashing station with hands-free controls and nonrefillable closed soap dispensing system, providing support for scrubbing up to the elbows, shall be located in the anteroom, with a minimum clearance of 3.281 feet (1 meter) between the rim of the sink and the door opening to the buffer room.*

1224.19.3.3.3.4 Eyewash station. *An eyewash station shall be provided in the anteroom if one is not provided in the buffer room.*

1224.19.3.3.3.5 Housekeeping. *Dedicated environmental services, materials and supplies shall be located in the anteroom.*

1224.19.3.3.3.6 Finishes. *The anteroom is considered a semi-restricted area with nonporous and cleanable surfaces, ceilings, walls and floors subject to wet cleaning. The surfaces of ceilings, walls, floors, fixtures, shelving, work surfaces, counters and cabinets shall be smooth, seamless and impervious, free from cracks and crevices and be nonshedding. Ceilings shall be monolithic or utilize cleanroom style scrubbable panels, able to withstand cleaning with chemicals. If ceilings consist of inlaid panels, the panels must be caulked around each panel to seal them to the support frame. Juncture of ceilings to wall shall be coved or caulked to avoid cracks and crevices where dirt can accumulate. Sprinkler systems shall be recessed, covered, easily cleanable and of a type suitable for a cleanroom environment. Wall finishes shall be 2-coat epoxy-covered gypsum board, seamless vinyl or other impervious covering. Work surfaces, shelving and cabinets shall be constructed of smooth, impervious materials, such as stainless steel or molded plastic so that they are easily cleaned and disinfected. Plastic laminate finish over a pervious substrate is not permitted.*

1224.19.3.3.3.7 Sealed tight room. *Room perimeter walls, ceiling, floors, doors and penetrations shall be sealed tightly to minimize air infiltration from the outside or from other rooms. Buffer room doors shall be glass, metal or other phenolic material, self-closing and with hands-free door operation.*

1224.19.3.3.4 Hazardous segregated compounding area (SCA). *When provided in lieu of a buffer/clean room and anteroom, a segregated compounding area, with a limitation on permitted compounded sterile preparations and allowable time of use, shall comply with the requirements of Title 16 Section 1751 and USP Chapter 800. The SCA shall include the PEC and be located in a negative pressure room dedicated to this use.*

1224.19.3.3.4.1 Air quality. *Hazardous Segregated Compounding Areas shall be under negative pressure and provide airflow from clean to less clean areas. Refer to California Mechanical Code Table 4A, Title 16 Section 1735 and USP Chapter 797 for additional requirements.*

1224.19.3.3.4.2 Handwashing station. *A handwashing station, with hands-free controls and nonrefillable closed soap dispensing system, providing support for scrubbing up to the elbows, shall be located in the SCA with a minimum clearance of 3.281 feet (1 meter) between the rim of the sink and the PEC.*

1224.19.3.3.4.3 Finishes. *The segregated compounding area is considered a semi-restricted area with nonporous and cleanable surfaces, ceilings, walls and floors subject to wet cleaning. The surfaces of ceilings, walls, floors, fixtures, shelving, work surfaces, counters and cabinets shall be smooth, seamless, impervious, free from cracks and crevices and be nonshedding. Ceilings shall be monolithic or utilize cleanroom style scrubbable panels, able to withstand cleaning with chemicals. If ceilings consist of inlaid panels, the panels must be caulked around each panel to seal them to the support frame. Juncture of ceilings to wall shall be coved or caulked to avoid cracks and crevices where dirt can accumulate. Sprinkler systems shall be recessed, covered and easily cleanable. Wall finishes shall be 2-coat epoxy-covered gypsum board, seamless vinyl or other impervious covering. Work surfaces shall be constructed of smooth, impervious materials, such as stainless steel or molded plastic so that they are easily cleaned and disinfected. Plastic laminate finish over a pervious substrate is not permitted.*

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1224.19.6 Support areas for the pharmacy.

1224.19.6.1 Access to information.

1224.19.6.1.1 Patient information. *Provisions shall be made for cross-checking medication and drug profiles of individual patients.*

1224.19.6.1.2 Pharmacological information. *Provisions shall be made for access to poison control, reaction data and drug information.*

1224.19.6.2 Office. *A separate room shall be provided for the Chief Pharmacist's office.*

1224.19.6.3 Education and training. *A multipurpose room shared with other departments shall be permitted to serve this purpose.*

1224.19.6.4 Outpatient medication consultation. *If medication is dispensed to outpatients from the hospital pharmacy, an area for consultation and patient education shall be provided.*

1224.19.6.5 Additional equipment and supply storage. *If a dose procedure is used, additional space and equipment shall be provided to accommodate supplies, packaging, labeling and storage, including space for carts.*

1224.19.7 Support areas for staff.

1224.19.7.1 Lounge, locker and toilet facilities. *Provide pharmacy staff lounge, toilet rooms and lockers that are readily accessible.*

1224.20 DIETETIC SERVICE SPACE.

1224.20.1 General. *Food and nutrition facilities shall be provided to support food services provided for staff, visitors and patients. Adequate space for the preparation and serving of food shall be provided. Equipment shall be placed so as to provide aisles of sufficient width to permit easy movement of personnel, mobile equipment and supplies. Food service facilities and equipment shall conform to these standards, the standards of the National Sanitation Foundation and the requirements of the local public health agency.*

1224.20.2 Functional elements. *On-site conventional food service preparation shall be provided as follows in the size and number appropriate for the type of food service selected:*

1224.20.2.1 Location. *Patient food preparation areas shall be directly accessible to the entry for food supply deliveries and for the removal of kitchen wastes, interior transportation, storage, etc., without traversing patient or public circulation. Food preparation, service and storage shall be inaccessible to nondietetic service staff.*

1224.20.2.2 Receiving/control stations. *Provide an area for the receiving and control of incoming dietary supplies. Space shall be provided for the delivery and transport equipment used, such as receiving carts/jacks, transport carts and returnables. The exterior door into the receiving area shall have a minimum clear width of 4 feet (1.22 m) and a minimum clear height of 7 feet (2.14 m).*

1224.20.2.3 Storage.

1. *Food storage space shall be readily accessible to the receiving area and shall be located to exclude traffic through the food preparation area to reach them. Storage spaces for bulk, refrigerated and frozen foods shall be provided. At least one week's (7 days) supply of staple foods and at least two (2) days' supply of frozen and two (2) days' supply of perishable foods shall be maintained on the premises. Food storage components shall be grouped for convenient access from receiving and to the food preparation areas. All food shall be stored clear of the floor. Lowest shelf shall be not less than 12 inches (305 mm) above the floor or shall be closed in and sealed tight for ease of cleaning.*

   As a minimum, dietary storage space shall be provided in accordance with the following schedule:

Licensed Bed Capacity	***Storage Space***
1 to 99 beds	*2 square feet (0.19 m^2) per bed*
100 to 199 beds	*200 square feet (18.58 m^2) plus 1 square foot 0.0929 m^2) per bed in excess of 100 beds*
200 beds and over	*300 square feet (27.99 m^2), plus $^1/_2$ square foot (0.0465 m^2) per bed in excess of 200 beds*

   Space to allow refrigeration for the storage of frozen and chilled foods shall be provided at a minimum of 2 cubic feet (0.057 m^3) of usable space per bed.
2. *Additional storage space for dietetic service supplies, such as paper products, equipment, tray delivery carts, etc., shall be provided.*
3. *Storage areas and sanitizing facilities for cans, carts and mobile-tray conveyors shall be provided.*
4. *Waste storage and recycling facilities (per local requirements) shall be located in a separate room immediately accessible to the outside for direct pickup or disposal.*

1224.20.2.4 Cleaning supplies storage. *Provide a separate storage room for the storage of nonfood items such as cleaning supplies that might contaminate edibles.*

1224.20.2.5 Food preparation workspaces. *Provide workspaces for food preparation, cooking and baking. These areas shall be as close as possible to the user (i.e., tray assembly and dining). Provide additional spaces for thawing and portioning.*

1224.20.2.6 Assembly and distribution. *The patient tray assembly area shall be immediately accessible to the food preparation and distribution areas.*

1224.20.2.7 Food service carts. *A cart distribution system shall be provided with spaces for storage, loading, distribution, receiving and sanitizing of the food service carts. The cart traffic shall be designed to eliminate any danger of cross-circulation between outgoing food carts and incoming soiled carts and the cleaning and sanitizing process. Cart circulation shall not be through food preparation areas.*

1224.20.2.8 Dining area. *Provide dining space(s) for patients, staf and visitors. These spaces shall be separate from the food preparation and distribution areas.*

1224.20.2.8.1 Employee dining. *Where separate employee dining space is provided, a minimum of 15 square feet (1.4 m^2) of floor area per person served, including serving area, shall be maintained.*

1224.20.2.9 Vending services. *If vending devices are used for unscheduled meals, provide a separate room that can be accessed without having to enter the main dining area.*

1224.20.2.10 Ware-washing facilities. *Ware-washing space shall be provided in a room separate from food preparation and serving areas. It shall be designed to prevent contamination of clean wares with soiled wares through cross-traffic. The clean wares shall be transferred for storage or use in the dining room area without having to pass through food preparation areas.*

1. *Commercial-type ware-washing equipment shall be provided.*
2. *Space shall be provided for receiving, scraping, sorting and stacking soiled tableware separate from food preparation areas.*
3. *Handwashing stations shall be provided in the ware-washing space.*

1224.20.2.11 Pot washing facilities. *Pot washing shall include three-compartmented sinks.*

1224.20.2.12 Waste storage room. *A food waste storage room shall be readily accessible to the food preparation and ware washing areas but not within the food preparation area. It shall have direct access to the hospital's waste collection and disposal facilities.*

1224.20.2.13 Handwashing stations. *Handwashing stations shall be provided within 20 feet (6096 mm) of each food preparation or serving area.*

1224.20.2.14 Office and administrative space. *An office shall be provided for the dietician or dietetic service supervisor. Dietetic service administrative staff shall have offices or other suitable space necessary to conduct business related to the dietetic service. Such office and administrative space shall:*

1. *Provide privacy and accommodate the preparation and maintenance of menus, reports and records.*
2. *Be located to provide an unobstructed view of the food preparation area.*

   Note: *This location requirement applies to all new dietetic service space.*

1224.20.2.15 Toilet room(s) and locker spaces. *Toilet rooms shall be provided for the exclusive use of the dietary staff. They shall not open directly into the food preparation areas, but shall be readily accessible to them. An enclosed, separate locker area shall be provided for dietetic service employee's clothing and personal belongings.*

1224.20.2.16 Housekeeping room. *A housekeeping room, meeting the requirements of Section 1224.4.15, shall be provided within the dietary department for the exclusive use of the dietary department.*

1224.20.3 Outside service. *On approval of the Licensing Agency, when food is provided by an outside food service, all applicable licensing and certification requirements shall be met. The facility shall maintain adequate space, equipment and food supplies to accommodate required functional elements listed in Section 1224.20.2, as required to provide patient food service in the event that outside food service is interrupted. A temporary mobile kitchen approved by the licensing agency can be used to meet the requirements of Section 1224.20.2 during construction.*

SUPPORT SERVICES.

1224.21 ADMINISTRATIVE SPACE.

1224.21.1 Administration. *An administration area shall be provided which shall provide for the following functions:*

1. *A lobby with reception and information counter or desk, waiting space, men's and women's public toilet room facilities, telephones and drinking fountain.*
2. *Offices for administrator and admitting.*

1224.21.2 Records. *Hospitals shall provide a health record service which shall accommodate the following functions:*

1. *Work area for sorting and recording records for either paper or electronic media.*
2. *Storage area for records for either paper or electronic media.*

1224.22 CENTRAL STERILE SUPPLY.

1224.22.1 Minimum requirements. *A central supply and sterilizing area shall be provided. Rooms or distinct spaces shall accommodate the following services and equipment:*

1. ***Soiled work area.*** *A receiving and gross cleaning area which shall contain work space and equipment for cleaning medical and surgical equipment and for disposal of or processing of soiled material.*
2. ***Clean work area.*** *A clean work area which shall contain work space and equipment for sterilizing medical and surgical equipment and supplies.*
3. ***Sterilizing space.***
4. ***Storage.*** *Provide storage space for sterile supplies and unsterile supplies.*

Exception: *Section 1224.22.1 does not apply to hospitals which serve psychiatric or alcoholism patients exclusively.*

1224.22.2 *All sterilizers and autoclaves which emit steam exhaust shall be vented to the outside of the building. Such vents shall be independent from the plumbing vent system.*

Exception: *Small instrument sterilizers.*

1224.23 STORAGE.

1224.23.1 General storage. *Hospitals shall provide general storage space of at least 20 square feet (1.86 m^2) per bed in addition to specialized storage spaces. All storage spaces shall be located within a conforming hospital building and readily accessible to the connecting corridor required under Section 1224.4.7.5. Required storage, including but not limited to patient, dietary, etc., shall accommodate at least 72 hours of storage capacity in a conforming building. Storage beyond this requirement may be in a non-hospital or nonconforming building.*

1224.23.2 Specialized storage. *Specialized storage spaces shall include the following:*

1224.23.2.1 Linen. *Provide separate and enclosed facilities for clean and soiled linen in each nursing unit. The clean linen storage space shall have a minimum area of 10 square feet (0.93 m^2) and may be within the clean utility room. The soiled linen collection space shall have an area of no less than 10 square feet (0.93 m^2), except where linen chutes are provided, and may be within the soiled utility room.*

1224.23.2.2 Supply. *One supply storage space having a minimum area of 15 square feet (1.39 m^2) shall be provided in each nursing unit. Supply storage may be within the clean utility room used only as part of a system for distributing clean and sterile supplies.*

1224.23.2.3 Wheelchairs. *A room or space shall be provided in each nursing unit for wheelchairs and gurneys. The wheelchair and gurney space shall have a minimum area of 15 square feet (1.39 m^2).*

1224.23.2.4 *Sterile and unsterile supplies shall be stored separately.*

1224.23.2.5 *Food storage shall be as described in Section 1224.20.*

1224.24 MORGUE AND AUTOPSY FACILITIES.

1224.24.1 *General acute-care hospitals with a licensed bed capacity of 50 to 99 beds shall provide a morgue with autopsy facilities.*

Exception: *This may not be required if it can be demonstrated to the licensing agency that morgue and autopsy facilities are available locally.*

1224.24.2 *General acute-care hospitals with a licensed bed capacity of 100 or more shall provide a morgue with autopsy facilities.*

1224.24.3 Minimum requirements. *The morgue and autopsy space shall have a minimum of 250 square feet (23.23 m^2) of floor area, no dimension of which shall be less than 10 feet (3048 mm), and provide for:*

1. *Handwashing station or scrub sink.*
2. *Space for refrigerated compartments if human remains are held unembalmed. Refrigerated rooms and prefabricated body refrigerator temperatures shall not be higher than 45°F (25°C).*

1224.25 EMPLOYEE DRESSING ROOMS AND LOCKERS.

1224.25.1 Minimum facilities. *Hospitals shall provide the following:*

1. *Separate dressing rooms for male and female personnel with lockers and a toilet room.*
2. *Additional dressing rooms for the surgical service and as required within any of the supplemental services.*

1224.26 HOUSEKEEPING ROOMS. *Shall be provided to serve each department and nursing unit, and may be shared by compatible departments, except when specifically required by other sections.*

1224.27 LAUNDRY.

1224.27.1 *If a laundry is to be provided, the following is required in addition to the laundry room:*

1. *A separate soiled linen receiving, holding and sorting room with handwashing fixture.*
2. *A separate clean linen storage, issuing and holding room.*
3. *Storage for laundry supplies.*

1224.27.2 Outside service. *If linen is processed off site, the following shall be provided within the hospital:*

1. *Soiled linen holding room.*
2. *Clean linen receiving room.*
3. *Clean linen storage room.*

SUPPLEMENTAL SERVICES.

1224.28 SUPPLEMENTAL SURGERY AND SPECIAL PROCEDURE SERVICES. *When provided, the following supplemental surgery and special procedure services shall meet the requirements below:*

1224.28.1 Cardiovascular and other special procedures. *When provided, the cardiovascular room shall have a minimum clear floor area of 650 square feet (60.39 m^2), with a minimum of 20 feet (6096 mm) clear dimension. Orthopedic surgical and other special procedure rooms shall have a minimum clear floor area of 600 square feet (55.74 m^2), with a minimum of 20 feet (6096 mm) clear dimension. When open-heart surgery is performed, an additional room in the restricted area of the surgical service space, that is directly accessible to this operating room, shall be designated as a pump room where extra corporeal pump(s), supplies and accessories are stored and serviced. Appropriate plumbing and electrical connections shall be provided in the cardiovascular, pump and storage rooms.*

1224.28.1.1 Service areas. *Shall be provided in accordance with Section 1224.15.3.*

Exception: *Where renovation work is undertaken in facilities built under the 2001 or prior California Building Code, existing rooms for cardiovascular, and other special procedures may have a minimum clear floor area of 500 square feet (46.45 m^2). Orthopedic surgical rooms shall have a minimum clear floor area of 360 square feet (33.44 m^2) and a minimum dimension of 18 feet (5486 mm).*

1224.28.2 Cardiac catheterization.

1224.28.2.1 Procedure room. *A procedure room with a minimum clear floor area of 400 square feet (37.16 m^2) for the procedure room in addition to spaces for control, monitoring and recording equipment and imaging equipment power and controls and a minimum of one scrub sink for each catheterization laboratory. This space does not include the control room.*

1224.28.2.1.1 Emergency response space. *Where electrophysiology studies are performed, dedicated space and equipment for emergency resuscitation and stabilization shall be immediately accessible to the procedure room.*

1224.28.2.2 Control room. *A control room or area shall be provided. A view window permitting full view of the patient from the control console shall be provided.*

1224.28.2.3 Equipment space. *An equipment space or enclosure large enough to contain imaging equipment transformers, power modules and associated electronics and electrical gear shall be provided.*

1224.28.2.4 Scrub facilities. *Scrub facilities with hands-free operable controls shall be provided adjacent to the entrance of procedure rooms.*

1224.28.2.5 Staff clothing change areas. *Appropriate areas shall be provided for male and female staff working within the surgical service space. The areas shall contain lockers, showers, toilets, handwashing stations and space for donning surgical attire. These areas shall be arranged to ensure a traffic pattern so that personnel entering from outside the service space can enter, change their clothing and move directly into the cardiac catheterization service space. The staff change area may be combined with the surgical staff change area.*

1224.28.2.6 Patient holding. *A patient preparation, holding, and recovery area or room shall be provided and arranged to provide visual observation before and after the procedure. This may occur in a unit outside of the catheterization service space.*

1224.28.2.7 Clean utility room. *A clean utility room shall be provided. If the room is used for preparing patient care items, it shall contain a work counter and handwashing station. If the room is used only for storage and holding of clean and sterile supply materials, the work counter and handwashing station shall be permitted to be omitted. The clean utility room may be shared with an adjacent surgical unit.*

1224.28.2.8 Soiled utility room. *A soiled utility room shall be provided which shall contain a handwashing station and a clinical sink (or equivalent flushing rim fixtures). When the room is used for temporary holding or soiled materials, the clinical sink and handwashing station shall be permitted to be omitted. The soiled utility may be shared with an adjacent surgical unit.*

1224.28.2.9 Housekeeping room. *Shall be a minimum floor area of 15 square feet (1.4 m^2). It shall contain a service sink or floor receptor and provisions for storage of supplies and housekeeping equipment. This may be shared with an adjacent surgical unit.*

1224.28.3 Freestanding cardiac catheterization laboratory service space. *A general acute care hospital referenced in Health and Safety Code Section 1255 (d)(3)(E) may provide cardiac catheterization laboratory service in a freestanding nonhospital building in conformance with this section and Section 1226.2.2. In addition, the service space shall comply with Section 1224.28.2 and applicable requirements in Section 1224.15.3 that are not covered by this section.*

1224.28.3.1 Outpatient support areas. *Outpatient support areas shall include outpatient waiting rooms in compliance with Section 1224.4.5. A separate space shall be provided where outpatients change from street clothing and are prepared for a procedure. This space shall include provisions for clothing storage, toilet room(s), sink and an area for clothing change and gowning.*

1224.28.3.2 Connection to hospital. *The freestanding cardiac catheterization laboratory service space shall be located in the nonhospital building such that the service space has a direct connection to the general acute care hospital providing cardiac surgery by a patient corridor link in compliance with Section 1224.4.7. The corridor link shall have a minimum width of 8 feet (2438 mm) as required under Section 1224.4.7.1. The corridor link shall connect to the hospital corridor system with access to all basic services as required under Section 1224.4.7.5.*

1224.28.3.3 Control station. *Control station(s) shall be located to permit visual observation of all traffic into the semi-restricted service space from unrestricted corridors and/or passageways.*

1224.28.3.4 Essential electrical system. *Cardiac catheterization laboratories shall meet the provisions for ambulatory surgical clinics required in the California Electrical Code including the requirements of Article 517.45 for an essential electrical system.*

1224.28.3.5 Services/systems and utilities. *Services/systems and utilities that support the catheterization laboratory space include, but are not limited to: normal power; emergency power; nurse call; communication and data systems; space heating systems; cooling systems; domestic hot and cold water systems; building drain and sewer systems; and medical gas systems. When these systems serve other portions of the building, any alteration to the system shall be subject to review by the Office of Statewide Hospital Planning and Development.*

1224.28.4 Interventional imaging. *Image-guided interventional procedures shall be performed in procedure rooms in compliance with this section. Cardiac catheterization operating rooms shall be in compliance with Section 1224.28.2, and hybrid operating rooms shall be in compliance with Section 1224.28.5.*

1224.28.4.1 Space requirements. *The procedure room shall meet the space, clearance and storage requirements for the imaging equipment contained in the room and the following:*

1. *A minimum clear dimension of 18 feet (5486 mm).*
2. *The procedure room shall also be sized to allow a minimum clearance of 4 feet (1219 mm) on all sides of the procedure table.*

1224.28.4.2 Pre-procedure and recovery. *Pre-procedure and recovery areas shall be immediately accessible to procedure rooms and separate from corridors. The pre-procedure and recovery areas shall comply with the requirements of Section 1224.16 Anesthesia/recovery Service Space.*

1224.28.4.3 Interventional MRI facilities. *Interventional and intraoperative magnetic resonance imaging (I-MRI) procedure rooms shall comply with Section 1224.28.5 Hybrid Operating Rooms.*

1224.28.4.4 Control room or area. *A control room or area shall be provided.*

1. *The control room or area shall be sized to accommodate the image-recording and viewing equipment.*
2. *A shielded view window permitting direct observation of the patient from the control console shall be provided.*
3. *The shielded control room shall be configured to prevent radiation exposure into occupied areas of the control room when ionizing radiation modalities are used.*

4. *Where the procedure room requires positive (or negative) pressure, a door shall be provided between the control room and the procedure room or between the combined control room/procedure room and other adjacent space.*
5. *Where control functions for ionizing radiation exposures take place in the procedure room, storage for personal radiation protection devices shall be provided.*

1224.28.4.5 Scrub facilities. *Scrub sinks shall be located outside of sterile areas. A minimum of one scrub sink station shall be provided for each interventional imaging procedure room. Scrub sinks shall have water supply controls not requiring direct contact of the hands for operation.*

1224.28.4.6 Medication station. *A medication station shall be provided in compliance with the requirements in Section 1224.4.4.4.*

1224.28.4.7 Reading room. *A reading room for reviewing images shall be available for use by the interventional imaging suite.*

1224.28.4.8 Imaging equipment room. *Imaging equipment room or enclosures large enough to contain x-ray transformers, power modules and associated electronics and electrical gear shall be provided. Sharing of imaging equipment rooms by multiple procedure rooms is permitted.*

1224.28.4.9 Clean utility room. *A clean utility room shall be provided in accordance with the requirements in Section 1224.4.4.6.*

1224.28.4.10 Soiled workroom. *A soiled workroom shall be provided in accordance with Section 1224.4.4.7.*

1224.28.4.11 Housekeeping room. *A housekeeping room shall be provided in accordance with the requirements of Section 1224.4.15.*

1224.28.4.12 Staff changing areas. *Male and female staff changing areas shall be provided and arranged to ensure a traffic pattern so that personnel can enter from an unrestricted area, change their clothing and move directly into the interventional imaging suite.*

1224.28.5 Hybrid operating room(s). *Hybrid operating rooms shall comply with the requirements of Section 1224.15 and comply with the requirements in this section.*

1224.28.5.1 Space requirements. *Each hybrid operating room shall meet the space, clearance and storage requirements for the imaging equipment contained in the room and the following:*

1. *A minimum clear floor area of 650 square feet (60.39 m^2) is required for a hybrid operating room unless the imaging equipment requires a larger area.*
2. *The minimum clear dimension shall be 24 feet (7315 mm) unless the requirements for the specific imaging equipment require a greater distance.*
3. *If mobile storage units are used in lieu of fixed cabinets, the minimum clear dimension shall be available between such units when they are parked against a permanent partition.*

1224.28.5.2 Control room. *If required, a control room shall be provided that accommodates the imaging system control equipment and the following requirements:*

1. *The control room shall have a minimum clear floor area of 120 square feet (11.15 m^2), which may include fixed work surfaces.*
2. *The room shall be physically separated from the hybrid operating rooms with walls and a door.*
3. *The room shall have viewing windows that provide for a full view of the patient and the surgical team. Cameras shall be permitted to provide for full view of patient while positioned inside bore.*
4. *If the control room is adjacent to a restricted area, it must be physically separated from the restricted area with walls and a door.*

1224.28.5.3 Imaging equipment room. *An imaging equipment room shall be provided for each hybrid operating room.*

1224.28.5.4 Radiation protection. *If the imaging equipment emits ionizing radiation, protection shall be provided in accordance with Section 1224.18.1.1.*

1224.28.5.5 Requirements for specific types of hybrid operating rooms.

1224.28.5.5.1 CT. *Hybrid operating rooms with intraoperative computerized tomography (CT) systems shall have control rooms that comply with Section 1224.18.3.1.*

1224.28.5.5.2 iMRI. *Hybrid operating rooms with intraoperative magnetic resonance imaging (iMRI) systems shall comply with the following:*

1. *Space and configuration requirements in Section 1224.18.4, except the clearances shall meet the requirements of 1224.28.5.1.*
2. *The control room shall comply with Section 1224.18.4, Item 1.*
3. *The anteroom shall comply with Section 1224.18.4, Item 2.*
4. *Entry doors to iMRI hybrid rooms shall swing outward from inside the room.*

1224.28.5.5.3 Vascular imaging. *Hybrid operating rooms with vascular imaging systems shall comply with Section 1224.28.4.*

1224.28.5.6 Pre-procedure and recovery. *Pre-procedure and recovery areas shall be immediately accessible to procedure rooms and separate from corridors. The pre-procedure and recovery areas shall comply with the requirements of Section 1224.16 (Anesthesia/recovery Service Space).*

1224.28.6 Electroconvulsive Therapy. *If electroconvulsive therapy (ECT) is provided, the requirements of this section shall be met. Where a psychiatric unit is part of a general acute care hospital (Section 1224.31 Psychiatric Nursing Unit), all the requirements in this section shall be permitted to be accommodated in a procedure suite that complies with the requirements in this section or in an operating room in a surgical suite that meets the requirements in Section 1224.15.*

1224.28.6.1 General. *The ECT procedure area may be a single procedure room or a suite of procedure rooms.*

1224.28.6.2 ECT procedure room.

1. *Space requirements. Each ECT procedure room shall have a minimum clear floor area of 200 square feet (18.6 m^2) with a minimum clear dimension of 14 feet (4267 mm).*
2. *Handwashing station. A handwashing station shall be provided.*
3. *Documentation area. Accommodation for written or electronic documentation shall be provided.*

1224.28.6.3 Pre-procedure and recovery area. *When ECT services have a low-volume of procedures, the ECT procedure room may be used for pre-procedure patient care and recovery. If a pre-procedure and recovery areas are provided they shall comply with the requirements of Section 1224.16.*

1224.28.6.4 Emergency equipment storage. *Space shall be provided in the procedure room(s) for storage of emergency equipment such as a CPR cart. A separate emergency equipment storage is permitted to serve more than one ECT procedure room.*

1224.28.6.5 Patient support areas. *A waiting area and changing area shall be provided for outpatient use in perioperative areas in support ECT suites that provide outpatient procedures. The waiting room shall comply with Section 1224.4.5. The changing area shall include space for changing or gowning, provisions for storing patients' belongings during the procedure and access to patient toilet(s).*

1224.29 INTENSIVE CARE UNITS.

1224.29.1 General. *The following shall apply to all types of intensive care service spaces, acute respiratory-care service spaces, burn center spaces, critical-care units, coronary-care service spaces, pediatric intensive-care service spaces unless otherwise noted. Each unit shall comply with the following provisions:*

1224.29.1.1 Service space. *Each intensive-care unit shall contain not less than four or more than 12 beds.*

Exception: *When approved by the licensing agency a small or rural hospital intensive care unit may consist of less than four but not less than two patient beds.*

1224.29.1.2 Patient space. *In new construction, each patient space (whether separate rooms, cubicles or multiple bed space) shall have a minimum of 200 square feet (18.58 m^2) of clear floor area with a minimum headwall width of 13 feet (3962 mm) per bed. There shall be a minimum clear dimension of 1 foot (305 mm) clear space from the head of the bed to the wall, a minimum of 5 feet (1524 mm) clear space from the foot of the bed to the wall, a minimum of 5 feet (1524 mm) clear space on one side of each bed for patient transfer, a minimum of 4 feet (1218 mm) clear width on the non-transfer side and a minimum of 8 feet (2438 mm) clear space between beds.*

Exception: *Where renovation of existing intensive care units is undertaken, in facilities approved under the 2001 or prior California Building Code, existing patient space (whether separate rooms, cubicles or multiple bed space) may be renovated or replaced in kind one for one in the renovated space. Such patient space shall have no less than 132 square feet (12.26 m^2) with no dimension less than 11 feet (3353 mm), and with 4 feet (1219 mm) of clearance at each side and the foot of the bed, and with a minimum of 8 feet (2438 mm) between beds. The space shall be designed so that all beds shall be placed in relation to the nurse station or work area to permit, enable or allow maximum observance of patients.*

1224.29.1.3 Private rooms. *When private rooms or cubicles are provided, view panels to the corridor shall be required with a means to provide visual privacy. Where only one door is provided to a bed space, it shall be arranged to minimize interference with movement of beds and large equipment. Sliding doors shall not have floor tracks. Where sliding doors are used for access to cubicles within a service space, a 3-foot-wide (914 mm) swinging door may also be provided for personnel communication.*

1224.29.1.4 Modular toilet. *Modular toilet/sink combination units located within a privacy curtain may be used within each patient space or private room. The toilet fixture shall be completely contained within cabinetry when not in use. This fixture shall not be equipped with a bedpan washing attachment. Exhaust ventilation requirements shall comply with the California Mechanical Code.*

1224.29.1.5 Visitors and visual privacy. *Each patient bed area shall have space at each bedside for visitors, and provisions for visual privacy from casual observation by other patients and visitors. For both adult and pediatric units, there shall be a minimum of 8 feet (2438 mm) between beds.*

1224.29.1.6 Outside environment. *Each patient bed shall have visual access, other than clerestory windows and skylights, to the outside environment with not less than one outside window in each patient bed area.*

1224.29.1.6.1 Distance. *The distance from the patient bed to the outside window shall not exceed 50 feet (15 240 mm). When partitioned cubicles are used, patients' view to outside windows may be through no more than two separate clear vision panels.*

1224.29.1.7 Handwashing stations. *Handwashing stations shall be directly accessible to nurse stations and patient bed areas. There shall be at least one handwashing station for every three beds in open plan areas, and one in each patient room. The handwashing station shall be located near the entrance to the patient cubicle or room.*

1224.29.1.8 Nurse station. *This area shall have space for counters and storage. It may be combined with or include centers for reception and communication.*

1224.29.1.9 Nurses' work area. *There shall be direct visual observation between either a centralized or distributed nurse station or work station and the heads of all patient beds in the intensive care unit.*

1224.29.1.10 Monitoring. *Each unit shall contain equipment for continuous monitoring. Monitors shall be located to permit easy viewing but not interfere with access to the patient.*

1224.29.1.11 Emergency equipment storage. *Space that is easily accessible to the staff shall be provided for emergency equipment such as a CPR cart.*

1224.29.1.12 Medication station. *A medication station shall be provided in accordance with Section 1224.4.4.4. Refrigerated storage is required.*

1224.29.1.13 Airborne infection isolation room. *At least one airborne infection isolation room shall be provided per unit. The room shall comply with the requirements of Section 1224.14.3; however, the adjoining toilet room is not required. Modular toilet units located within a privacy curtain may be used within the airborne infection isolation room. The modular toilet fixture shall comply with Section 1224.29.1.4.*

Exception: *When approved by the licensing agency an airborne infection isolation room is not required for small or rural hospitals or protected environment units.*

1224.29.1.14 Additional service spaces. *The following additional service spaces shall be immediately accessible within each intensive care service space. These may be shared by more than one intensive care unit provided that direct access is available from each.*

1224.29.1.14.1 Clean utility/workroom. *Clean utility/workroom shall be provided in accordance with Section 1224.4.4.6.*

1224.29.1.14.2 Clean linen storage. *There shall be a designated area for clean linen storage. This may be within the clean utility room or a separate closet.*

1224.29.1.14.3 Soiled utility/workroom. *Soiled workroom or soiled holding room shall be provided in accordance with Section 1224.4.4.7.*

1224.29.1.14.4 Nourishment area. *A nourishment area or room shall be provided in accordance with Section 1224.4.4.5.*

1224.29.1.14.5 Ice machine. *Each unit shall have equipment to provide ice for treatments and nourishment. Ice-making equipment may be in the clean utility room or at the nourishment station. Ice intended for human consumption shall be from self-dispensing icemakers.*

1224.29.1.14.6 Equipment storage room. *Appropriate room(s) shall be provided for storage of large items of equipment necessary for patient care. Each intensive care unit shall provide not less than 20 square feet (1.86 m^2) per patient bed.*

1224.29.1.15 Support. *The following shall be provided and shall be located immediately accessible to the unit:*

1. ***Visitors' waiting room.***
2. ***Office space.***
3. ***Staff lounge(s) and toilet room(s).***
4. ***Multipurpose room(s).*** *Provide for staff, patients and patients' families for patient conferences, reports, education, training sessions and consultation.*
5. ***Housekeeping room.*** *Provide within or immediately accessible to the intensive care unit. It shall not be shared with other nursing units or departments.*
6. ***Gurney and wheelchair storage.*** *Provide a minimum 15 square feet (1.39 mm) per each nursing unit.*

1224.29.2 Newborn intensive care units (NICU). *The NICU shall comply with all the requirements of Section 1224.29.1 except as supplemented, amended or modified below.*

1224.29.2.1 Entrance. *The NICU shall have a clearly identified entrance and reception area for families. The area shall permit visual observation and contact with all traffic entering the unit.*

1224.29.2.2 Handwashing station(s). *Provide one handwashing station for each four infants and for each major fraction thereof. In a multiple-bed room, every bed position shall be within 20 feet (6096 mm) of a handwashing station. Where an individual room concept is used, a handwashing station shall be provided within each infant care room.*

1224.29.2.3 Doors. *At least one door to each patient room shall be a minimum of 44 inches (1118 mm) wide.*

1224.29.2.4 View windows. *When viewing windows are provided, provision shall be made to control casual viewing of infants. Controls shall be provided to enable lighting to be adjusted over individual patient care spaces. Darkening sufficient for transillumination shall be available when necessary.*

1224.29.2.5 Control station. *A central area shall serve as a control station, and shall have space for counters and storage, and direct access to a handwashing station and gowning. It may be combined with or include centers for reception, communication and patient monitoring.*

1224.29.2.6 Area. *Each patient care space shall contain a minimum of 120 square feet (11.15 m^2) of clear floor area per bassinet excluding handwashing fixtures and aisles with a minimum width of 11 feet (3353 mm) at headwall. There shall be an aisle for circulation adjacent to each patient care space with a minimum width of 4 feet (1219 mm). Where multi-patient rooms are used, a separate treatment area of 120 square feet (15.15 m^2) shall be provided in compliance with Section 1224.4.4.1.2.*

Exception: *Where renovation of existing NICUs is undertaken in facilities built under the 2001 or prior California Building Code, patient care areas shall have no less than 80 square feet (7.43 m^2) of clear floor area per bassinet exclusive of space for nurse control, scrubbing and gowning and reception area.*

1224.29.2.6.1 Treatment area/room. *A treatment area/room, with temperature control, shall be provided immediately accessible to the general patient care space.*

1224.29.2.7 Ceilings. *Ceilings shall have a noise reduction coefficient (NRC) of at least 0.90.*

1224.29.2.8 Airborne infection isolation room. *Shall comply with the requirements of Section 1224.29.1.13 except for separate toilet, bathtubs or shower. The room shall be enclosed and separated from the nursery unit with provisions for observation of the infant from adjacent nurseries or control area(s).*

1224.29.2.9 Lactation. *Space shall be provided for lactation support and consultation in or immediately accessible to the NICU.*

1224.29.2.10 Infant formula facilities. *Nourishment area required under Section 1224.29.1.14.4 not required. Newborn intensive care units shall include infant formula facilities complying with the following requirements:*

1224.29.2.10.1 Location.

1. *Where infant formula is prepared on site, direct access from the formula preparation room to any infant care room is prohibited.*
2. *The formula preparation room shall be located in or adjacent to the NICU. The formula preparation room may be located at another location as approved by the Licensing Agency.*

1224.29.2.10.2 Formula preparation room. *The formula preparation room shall be securable, facilitate workflow that supports aseptic technique, and include the following:*

1. *A separate cleanup area for washing and sanitizing. This area shall include a handwashing station, a work counter and work space and equipment for washing, rinsing and sanitizing bottles, other feeding utensils and equipment.*
2. *A separate area for preparing infant formula. This area shall contain a refrigerator, a freezer, a work counter, a formula sterilizer, storage facilities and a handwashing station.*

1224.29.2.10.3 Refrigerated storage and warming facilities for infant formula. *Shall be accessible for use by NICU personnel at all times.*

1224.29.2.10.4 Commercial infant formula. *Where only commercially prepared infant formula is used, omission of the formula preparation room may be permitted. Storage and handling may occur in the NICU workroom or in a formula preparation area adjacent to the nursing unit. The preparation area shall not have direct access to any infant care room and shall include the following:*

1. *A work counter*
2. *A hand-washing station*
3. *Storage facilities*

1224.29.2.10.5 Cleaning equipment and supplies storage. *Separate provisions for dedicated cleaning equipment and supplies shall be readily available to the formula preparation room and the formula preparation area.*

1224.29.2.11 Emergency equipment storage. *Space shall be provided for emergency equipment that is under direct control of the nursing staff, such as a CPR cart.*

1224.29.2.12 Housekeeping room. *Shall be directly accessible from the unit and be dedicated for the exclusive use of the neonatal intensive care unit.*

1224.29.2.13 Daylight. *In addition to meeting the requirements in Section 1224.4.9, at least one source of daylight shall be visible from newborn care areas.*

1. *External windows in infant care rooms shall be glazed with insulating glass to minimize heat gain or loss.*
2. *External windows in infant care rooms shall be situated at least 2 feet (610 mm) away from any part of a baby's bed to minimize radiant heat loss from the baby.*
3. *All external windows shall be equipped with easily cleaned shading devices that are neutral color or opaque to minimize color distortion from transmitted light.*

1224.30 PEDIATRIC AND ADOLESCENT UNIT. *A pediatric nursing unit shall be provided if the hospital has eight or more licensed pediatric beds. Pediatric patient area and adolescent patient area shall be separate from each other and shall be separate from adult nursing units. Common areas including exam and treatment rooms, service areas and playrooms may be shared and used by pediatric and adolescent patients at different times. The unit shall meet the following standards:*

1224.30.1 Patient rooms. *Patient rooms shall have direct visual observation between either a centralized or distributed nurse station or workstation or by other means if approved by licensing agency. Each patient room shall meet the following standards:*

1224.30.1.1 Beds. *The space requirements for pediatric patient beds shall be the same as required by Section 1224.14.1.2.*

1224.30.1.2 Windows. *Each patient room shall have a window in accordance with Section 1224.4.9.*

1224.30.2 Examination room and treatment rooms. *An exam room and treatment room shall be provided in or adjacent to the pediatric unit for pediatric and adolescent patients. A separate area for infant examination and treatment may be provided within the pediatric nursery workroom.*

1224.30.3 Service areas. *The service areas in the pediatric and adolescent nursing units shall conform to Section 1224.14.2 and shall also provide the following:*

1224.30.3.1 Playroom. *A playroom shall be provided and have direct visual observation between either a centralized or distributed nurse station or workstation or by other means if approved by licensing agency.*

1224.30.3.2 Infant formula. *Space for preparation and storage of infant formula shall be provided immediately accessible to the unit.*

1224.30.3.3 Toilet rooms. *Patient toilet room(s) with a lavatory in each room, in addition to those serving bed areas, shall be located adjacent to play area(s) and in or directly accessible to each central bathing facility.*

1224.30.3.4 Storage. *Closets or cabinets for toys, educational and recreational equipment shall be provided.*

1224.30.3.5 Airborne infection isolation room. *At least one airborne infection isolation room shall be provided within each pediatric unit; minimum of one per 15 beds. Airborne infection isolation room(s) shall comply with the requirements of Section 1224.14.3.*

1224.30.3.6 Clean and soiled workrooms. *Separate clean and soiled workrooms or holding rooms shall be provided as described in Sections 1224.14.2.6 and 1224.14.2.7.*

1224.31 PSYCHIATRIC NURSING UNIT.

1224.31.1 Psychiatric unit space. *A psychiatric unit shall be housed in a separate nursing unit and shall provide the following:*

1224.31.1.1 General. *A psychiatric nursing unit shall meet the requirements of Section 1224.14 for a unit that provides acute medical care. A non-medical psychiatric nursing unit shall meet the requirements of Sections 1228.4, 1228.13 and 1228.14 based on the functional program. Specific application shall respond to the patient injury and suicide prevention component of the Patient Safety Risk Assessment prepared under California Administrative Code (Part 1 of Title 24) Section 7-119. If a unit provides acute medical care, the unit shall be located in a building that is compliant with California Administrative Code Chapter 6 for OSHPD-1.*

1224.31.1.2 Windows. *Windows modified to prevent patients from leaving the unit.*

1224.31.1.3 Access control. *Entrances and exits which may be locked if necessary.*

1224.31.1.4 Seclusion room(s). *Seclusion rooms shall be provided and comply with Section 1224.4.4.1.4.*

1224.31.1.5 Consultation room(s). *Used for interviewing patients.*

1224.31.1.6 Dining and recreation. *Provide spaces for dining and recreation. The total area for these purposes shall be not less than 30 square feet (2.8 m^2) per patient.*

1224.31.1.7 Storage. *Storage closets or cabinets for recreational and occupation therapy equipment.*

1224.31.1.8 Exam or treatment room. *A room for physical examinations and medical treatment.*

1224.31.1.9 Activity spaces. *Psychiatric rehabilitation activity space shall be provided in compliance with Section 1228.13.1 except as modified as follows:*

1224.31.1.9.1 Indoor activity rooms. *Two separate activity rooms shall be provided; one may be the recreation room required by Section 1224.31.1.11, and one shall be for quiet activities to serve as a patient lounge. The patient lounge shall be a minimum 120 square feet (11.15 m^2).*

1224.31.1.9.2 Outdoor activity area. *The outdoor activity area shall be dedicated for use by the psychiatric nursing unit.*

1224.31.1.10 Occupational therapy. *Facilities for occupational therapy shall comply with Section 1224.35.3, Items 1, 2 and 3.*

1224.31.1.11 Recreation. *A recreation room with a minimum of 100 square feet (9.3 m^2) in each building, and on each floor of a building accommodating six or more psychiatric patients.*

1224.31.1.12 Nurse call. *Refer to Section 1224.4.6.5.*

1224.31.1.13 Privacy. *Visual privacy in multibed rooms (e.g., cubicle curtains) is not required.*

1224.31.1.14 Tamper resistant. *The ceiling and the air distribution devices, lighting fixtures, sprinkler heads and other appurtenances shall be of a tamper-resistant type.*

1224.31.1.15 Toilet rooms. *Each patient room shall be provided with a private toilet room that meets the following requirements:*

1. *The door shall not be lockable from within.*
2. *The door shall be capable of swinging outward.*
3. *The ceiling shall be of tamper-resistant construction and the air distribution devices, lighting fixtures, sprinkler heads and other appurtenances shall be of the tamper-resistant type.*

1224.31.1.16 Handwashing stations. *Handwashing stations located in patient rooms and patient toilet rooms may include antiligature features that do not compromise compliance with the hot and cold water supply controls, laminar flow and sink requirements of Section 210.0 and Table 4-2 of the California Plumbing Code. Handwashing stations within patient rooms and patient toilet rooms in psychiatric nursing units are not required to be equipped with gooseneck spouts and the discharge point may be less than 5 inches (127 mm) above the fixture rim.*

1224.31.1.17 Administrative center(s) or nurse station(s). *The distance between the nurse station's entrance and the center of the doorway of the most remote patient bedroom shall not exceed 90 linear feet (27 432 mm). Refer to Section 1224.4.4.2.*

1224.31.2 Education. *If a unit treats children of school age over a period of one month or more, it shall provide physical facilities for an educational program, such as classrooms and an office for the teacher.*

1224.31.3 Service areas. *The standards noted in Section 1224.14.2 shall apply to service areas for psychiatric nursing units.*

1224.32 OBSTETRICAL FACILITIES (PERINATAL UNIT SPACE).

1224.32.1 General. *The obstetrical facility, including cesarean operating room(s) and delivery room(s), shall be located and designed to prohibit nonrelated traffic through the unit.*

1224.32.2 Antepartum and postpartum unit*.*

1224.32.2.1 Patient bedrooms. *Antepartum and postpartum bedrooms shall comply with Section 1224.14.1.*

1224.32.2.2 Service areas. *Shall be provided in accordance with Section 1224.14.2 with the following additions:*

1. *Staff lounge.*
2. *Staff storage. Lockable closets or cabinets for personal articles of staff.*
3. *Consultation/conference room(s).*

1224.32.3 Cesarean delivery and delivery service space. *When cesarean operating rooms are located in the obstetrical suite, access and service arrangements shall be such that neither staff nor patients are required to travel through the cesarean delivery area to access other services.*

1224.32.3.1 Cesarean delivery suite. *A minimum of one cesarean operating room shall be provided in the obstetrical unit, unless a surgical operating room is designated specifically for cesarean delivery procedures. The cesarean delivery suite shall include the following:*

1224.32.3.1.1 Cesarean operating room(s). *Provide a minimum clear floor area of 360 square feet (33.45 m^2) with a minimum dimension of 16 feet (4877 mm). There shall be a minimum of one such room.*

1224.32.3.1.2 Scrub facilities*. Scrub sinks shall be located outside of sterile areas and meet the requirements of Section 1224.32.3.8.2.4.*

1224.32.3.1.3 Control/nurse station. *A control station shall be provided in accordance with Section 1224.15.3.1 and shall be located to restrict unauthorized traffic into the suite.*

1224.32.3.1.4 Soiled workroom*. A soiled workroom shall be provided in accordance with Section 1224.15.3.7.*

1224.32.3.1.5 Housekeeping. *A housekeeping room shall be provided for the use of the cesarean delivery suite.*

1224.32.3.1.6 Perioperative support services. *Preoperative patient holding and post-anesthesia recovery shall be provided in accordance with Section 1224.16. Post-anesthesia care shall provide direct access to the cesarean surgical service space without crossing unrestricted corridors.*

1224.32.3.2 Delivery room(s). *At least one delivery room shall be provided in the obstetrical unit. Delivery rooms shall have a minimum clear floor area of 300 square feet (27.87 m^2). An emergency communication system shall be connected with the obstetrical facilities control station.*

1224.32.3.2.1 Postpartum bed ratio. *Delivery rooms, which are used for no other purpose, shall be provided at the ratio of one per 12 postpartum beds and for each major fraction thereof.*

Exceptions:

1. *If LDR or LDRP beds are provided, each LDR or LDRP may be counted as a delivery room in the postpartum bed ratio. This does not exempt the delivery room required per Section 1224.32.3.2.*
2. *When approved by the licensing agency, the operating room of small or rural hospitals with a licensed bed capacity of 50 or less may serve as the delivery room.*

1224.32.3.3 Clocks. *Shall be provided as follows:*

1. *A direct-wired or battery-operated clock with sweep second hand and lapsed time indicators in each cesarean operating and delivery room.*
2. *A direct-wired or battery-operated clock or other equivalent timing device, visible from the scrub-up sinks.*

1224.32.3.4 Surgical lights. *Provide a surgical light in each cesarean operating or delivery room.*

1224.32.3.5 Infant resuscitation. *Provide within cesarean operating rooms and delivery rooms a minimum clear floor area of 80 square feet (7.43 m^2) in addition to the required area of each room or may be provided in a separate but immediately accessible room with a clear floor area of 150 square feet (13.94 m^2). Six single or three duplex electrical outlets shall be provided for the infant in addition to the facilities required for the mother.*

1224.32.3.6 Labor room(s) (LDR or LDRP rooms may be substituted). *Where LDRs or LDRPs are not provided, a minimum of two labor beds shall be provided for each cesarean operating room. Each room shall be designed for either one or two beds with a minimum clear floor area of 120 square feet (11.15 m^2) per bed. Each labor room shall contain a handwashing station and have access to a toilet room. One toilet room may serve two labor rooms, Labor rooms shall have controlled access with doors that are arranged for observation from a nursing station. At least one shower (which may be separate from the labor room if under staff*

control) for use of patients in labor shall be provided. Windows in labor rooms, if provided, shall be located, draped or otherwise arranged, to preserve patient privacy from casual observation from outside the labor room.

***Exception:** Where renovation of labor rooms is undertaken in facilities built under the 2001 or prior California Building Code, existing labor rooms shall have a minimum clear floor area of 100 square feet (9.29 m^2) per bed.*

***1224.32.3.7 Recovery room(s) (LDR or LDRP rooms may be substituted).** Each recovery room shall contain at least two patient care stations and have a nurse station, with charting facilities, located to permit visual observation of all beds. Each room shall include a handwashing station and a medication station. A clinical sink with bedpan flushing device shall be directly accessible, as shall storage for supplies and equipment. Provide visual privacy of the new family.*

***1224.32.3.8 Service areas.** Individual rooms shall be provided as indicated in the following standards; otherwise, alcoves or other open spaces that do not interfere with traffic may be used.*

***1224.32.3.8.1 Services.** The following services shall be provided:*

1. *Control/nurse station. This shall be located to restrict unauthorized traffic into the service space.*
2. *Soiled workroom or soiled holding room. See Section 1224.4.4.7.*
3. *Fluid waste disposal.*

***1224.32.3.8.2 Shared services.** The following services shall be provided and may be shared with the surgical facilities. Where shared, areas shall be arranged to avoid direct traffic between the delivery and operating rooms.*

***1224.32.3.8.2.1 Supervisor's office or station.** Office or station shall be a minimum of 80 square feet (7.43 m^2) and have a desk.*

***1224.32.3.8.2.2 Waiting room.** This room shall have toilet rooms, telephone(s) and drinking fountains that are immediately accessible. The toilet rooms shall contain a lavatory.*

***1224.32.3.8.2.3 Drug distribution station.** The drug distribution station shall have a handwashing station and provisions for controlled storage, preparation and distribution of medication.*

***1224.32.3.8.2.4 Scrub facilities for cesarean operating or delivery rooms(s).** Two positions shall be provided adjacent to entrance to the first cesarean operating room. Provide one additional scrub sink per cesarean or delivery operating room. Scrub facilities shall be arranged to minimize any splatter on nearby personnel or supply carts. In new construction, provide view windows at scrub stations to permit the observation of room interiors.*

***1224.32.3.8.2.5 Clean utility room.** A clean utility room shall be provided if clean materials are assembled within the obstetrical service space prior to use. If a clean utility room is provided see Section 1224.4.4.6.*

1224.32.3.8.2.6 Storage.

1. *Clean sterile storage area readily accessible to the delivery room.*
2. *Equipment storage room(s) for equipment and supplies used in the obstetrical service space.*

***1224.32.3.8.2.7 Workroom.** An anesthesia workroom for cleaning, testing and storing anesthesia equipment. It shall contain a work counter, sink and provisions for separation of clean and soiled items.*

***1224.32.3.8.2.8 Male and female staff clothing change areas.** The clothing change area shall be designed to ensure a traffic pattern so that personnel entering from unrestricted area outside the delivery service space enter, change their clothing and move directly into the delivery service semi-restricted area, and eliminate cross-traffic between clean and contaminated personnel. The area shall contain lockers, showers, toilets, handwashing stations and space for donning and disposing scrub suits and booties.*

***1224.32.3.8.2.9 Staff lounge.** Lounge and toilet room facilities for obstetrical staff shall be readily accessible to cesarean operating rooms(s), delivery room(s), labor rooms(s) and recovery room(s). Each toilet room shall contain a handwashing station.*

***1224.32.3.8.2.10 On-call room.** An on-call room(s) for physician and/or staff shall be provided, but may be located elsewhere in the facility.*

1224.32.3.8.2.11 Housekeeping room.

1224.32.4 LDR and LDRP facilities.

***1224.32.4.1 Location.** LDR room(s) may be located in a separate LDR service space or as part of the cesarean/delivery service space. The postpartum unit may contain LDRP rooms.*

***1224.32.4.2 Space requirements.** These rooms shall have a minimum of 250 square feet (23.23 m^2) of clear floor area with a minimum dimension of 13 feet (3962 mm). There shall be space for crib and sleeping space for support person. If an infant resuscitation room is not provided elsewhere, service space shall be provided in this room per Section 1224.32.3.5 in addition to the minimum service required for the mother. The medical gas outlets shall be located in the room so that they are accessible to the mother's delivery area and infant resuscitation area.*

***1224.32.4.3 Occupancy.** Each LDR or LDRP room shall be for single occupancy.*

***1224.32.4.4 Shower or tub.** Each LDR or LDRP room shall have direct access to a private toilet room with shower or tub.*

***1224.32.4.5 Handwashing stations.** Each LDR or LDRP room shall be equipped with handwashing stations.*

1224.32.5 Newborn/well baby nurseries.

1224.32.5.1 General. *Infants shall be housed in nurseries that comply with the standards below. All nurseries shall be immediately accessible to the postpartum unit and obstetrical facilities. The nurseries shall be located and arranged to preclude the need for unrelated pedestrian traffic. No nursery shall open directly onto another nursery. Each nursery shall contain the following:*

1224.32.5.1.1 Handwashing stations. *At least one handwashing station shall be provided for each six infant bassinets.*

1224.32.5.1.2 Storage. *Storage for linens and infant supplies at each nursery room.*

1224.32.5.1.3 Lactation. *A consultation/demonstration/breast feeding or pump room shall be provided in a location that is readily accessible to the nursery. Provisions shall be made, either within the room or immediately accessible to the room, for a sink, counter, refrigeration and freezing, storage for pump and attachments and educational materials. This area may be shared between units.*

1224.32.5.1.4 Workroom(s). *Each nursery shall be served by a connecting workroom. The workroom shall contain gowning facilities at the entrance for staff and housekeeping personnel, work counter, refrigerator, storage for supplies and a handwashing station. One workroom may serve more than one nursery room provided that required services are convenient to each. Adequate provision shall be made for storage of emergency cart(s) and equipment out of traffic and for the sanitary storage and disposal of soiled waste.*

1224.32.5.1.5 Housekeeping room. *A housekeeping room shall be provided for the exclusive use of the nursery unit. It shall be directly accessible from the unit.*

1224.32.5.1.6 Charting space. *Charting facilities shall have linear surface space to ensure that staff and physicians may chart and have simultaneous access to information and communication systems.*

1224.32.5.2 Space requirements. *Each newborn nursery room shall contain no more than 16 infant stations. Nurseries shall provide a minimum of 25 square feet (2.32 m^2) of floor area per bassinet, with at least 3 feet (914 mm) between bassinets and at least 6 inches (152 mm) from a wall.*

1224.33 EMERGENCY SERVICE.

1224.33.1 Definition. *Levels of emergency care range from initial emergency management as Standby Emergency Medical Service, with a Physician on call; to definitive emergency care as Basic Emergency Medical Service, with a Physician on duty; to a Comprehensive Emergency Medical Service as an Emergency Department.*

1224.33.2 Standby Emergency Medical Service. *If provided, initial emergency management shall be provided in a specifically designated area of the hospital which shall include the following elements:*

1224.33.2.1 Exterior entrance. *A well-marked, illuminated and covered entrance, at grade level. The emergency vehicle entry cover shall provide shelter for both the patient and the emergency medical crew during transfer from an emergency vehicle into the building. This exterior entrance shall not be substituted for the required accessible entrance to the hospital, protected from the weather by canopy or roof overhang assigned for passengers loading zone. Ambulance entrances shall provide a minimum of 6 feet (183 mm) in clear width to accommodate bariatric stretchers, mobile patient lift devices and accompanying attendants. Reception shall be located to permit staff observation and control of access to treatment area, pedestrian and ambulance entrances and public waiting area.*

1224.33.2.2 Treatment room. *Standby emergency service shall include at least one treatment room with the following elements:*

1. *The area shall not be less than 120 square feet (11.15 m^2) of clear floor area, exclusive of toilet room(s), waiting area and storage.*
2. *Each treatment room shall contain an examination light, work counter and handwashing station.*
3. *Medical equipment, cabinets, medication storage and counter space for writing.*
4. *The dimensions and arrangement of treatment rooms shall be such that there is a minimum of 3 feet (914 mm) between the sides and foot of the bed/gurney and any wall or any other fixed obstruction. The treatment room may have additional space and provisions for several patients with cubicle curtains for privacy.*
5. *Multiple-station treatment rooms shall provide a minimum of 80 square feet (7.43 m^2) per patient gurney, with a minimum 8 foot width (2,438 mm) and 3 feet (914 mm) at the foot of the bed/gurney, with a minimum of 3 feet to any wall or fixed obstruction, and a minimum of 5 feet (1524 mm) between patient gurneys. Patient gurneys shall be separated from adjoining patient care stations by curtains. A minimum width of 6 feet (1829 mm) of access/circulation outside the curtain shall be provided. Handwashing stations shall be provided for each four treatment stations and for each major fraction thereof in multiple-station areas. These shall be uniformly distributed to provide equal access from each patient station.*

Exception: *Where renovation of existing treatment rooms is undertaken in facilities approved under the 2001 or prior California Building Code, existing treatment rooms may be renovated, or replaced in kind one for one in the renovated space. Such treatment rooms shall have no less than 80 square feet (7.43 m^2) of clear floor area, the least dimension of which shall be 8 feet (2438 mm).*

1224.33.2.3 Storage. *Equipment and supply storage shall be provided and be sized for general medical/surgical emergency supplies, medications and equipment such as ventilator, defibrillator, splints, etc. This storage shall be located in an alcove or room, out of corridor or hallway traffic and under staff control.*

1224.33.2.4 Lobby. *Provisions for reception, control and public waiting, including a public toilet room(s) with handwashing fixture(s) and public telephone.*

1224.33.2.5 Toilet room(s). *Patient toilet room(s) with handwashing station(s) shall be immediately accessible to the treatment room(s).*

1224.33.2.6 Communication. *Communication connections to the Poison Control Center and local EMS system shall be provided.*

1224.33.2.7 Observation area. *A patient station with a minimum clear floor area of 100 square feet (9.29 m^2) shall be provided under the visual control of an emergency service staff work area. The patient station shall have space at bedside for visitors and shall have provision for visual privacy from casual observation by other patients and visitors. The dimensions and arrangement of rooms with multiple beds/gurneys shall be such that there is a minimum of 3 feet (914 mm) between the sides and any wall or any other fixed obstruction. A minimum clearance of 3 feet (914 mm) shall be provided between beds, and a clearance of 4 feet (1219 mm) shall be available at the foot of each bed to permit the passage of equipment and beds. A handwashing station shall be located in each room, and at least one handwashing station shall be provided for every four patient stations, and for each major fraction thereof, in open-bay areas. These shall be uniformly distributed to provide equal access from each patient station.*

Exception: *For small and rural hospitals, the observation area need not be dedicated solely for that purpose.*

1224.33.2.7.1 Behavioral health observation area. *If provided, a patient station with a minimum clear floor area of 40 square feet (12.19 m^2) shall be provided under the visual control of an emergency service staff work area. The patient station shall have provision for visual privacy from casual observation by other patients and visitors. The dimensions and arrangement of rooms with multiple recliners, beds or gurneys shall be such that there is a minimum of 3 feet (914 mm) clearance on one side. A minimum clearance of 3 feet (914 mm) shall be provided between patient stations, and a clearance of 4 feet (1219 mm) shall be available at the foot of each patient station to permit the passage of equipment and beds. A handwashing station shall be located in each room, and at least one handwashing station shall be provided for every eight patient stations, and for each major fraction thereof, in open-bay areas. These shall be uniformly distributed to provide equal access from each patient station.*

1224.33.2.8 Airborne infection isolation exam/treatment room. *If provided, the airborne infection isolation exam/treatment room shall comply with the requirements of Section 1224.4.4.1.3.*

1224.33.3 Basic Emergency Medical Service. *When 24-hour basic emergency service is to be provided, at a minimum, all the provisions of Standby Emergency Service under Section 1224.33.2 and the following shall be provided:*

1224.33.3.1 Exterior entrance. *In addition to the requirements of Section 1224.33.2.1 the emergency entrance shall have direct access from public roads for ambulance and vehicle traffic conforming with the requirements of the local authorities having jurisdiction. Entrance and driveway shall be clearly marked. If a raised platform is used for ambulance discharge, provide a ramp for pedestrian and wheelchair access.*

1224.33.3.2 Patient access. *Paved emergency access shall be provided to permit discharge of patients from automobiles and ambulances, and temporary parking convenient to the entrance.*

1224.33.3.3 Reception, triage and control station(s). *This area shall be located to permit staff observation and control of access to treatment areas, pedestrian and ambulance entrances and public waiting area.*

1224.33.3.4 Wheelchair and gurney storage. *Storage for wheelchairs and gurneys for arriving patients shall be located out of circulation paths with access to emergency entrances.*

1224.33.3.5 Public waiting area. *A public waiting area shall be provided in compliance with Section 1224.4.5 and include provision of public toilet room(s), drinking fountains and telephone adjacent to the waiting area, dedicated to, and within, the Emergency Service Space.*

1224.33.3.6. Examination and treatment room(s). *Examination and treatment rooms shall meet the requirements under Section 1224.33.2.2.*

1224.33.3.7 Trauma/cardiac rooms. *These rooms are for emergency procedures, including emergency surgery, and shall have at least 250 square feet (23.23 m^2) of clear floor space. A minimum clearance of 5 feet (152 mm) shall be provided around all sides of the procedure table or gurney. Each room shall have cabinets and emergency supply shelves, image viewing capability, examination lights and counter space for writing. Additional space with cubicle curtains for privacy may be provided to accommodate more than one patient at a time in the trauma room with a minimum clear floor area of 200 square feet (18.58 m^2) for each patient bay defined by the privacy curtains. There shall be storage provided for immediate access to attire used for universal precautions. Doors leading from the ambulance entrance to the cardiac trauma room shall have an opening with a minimum width of 5 feet (1524 mm). At least one scrub sink shall be located outside the entrance to each trauma room. One scrub station consisting of two scrub positions is permitted to serve two trauma rooms if located adjacent to the entrance of each procedure room. The placement of scrub sinks shall not restrict the minimum required corridor width. If a handwashing station is provided within the trauma room, it does not satisfy the requirement for a scrub sink. The handwashing station shall have a minimum of 5 feet (1524 mm) clearance from the procedure table and not located between any curtained procedure area and the entrance to a multi-bay trauma room.*

1224.33.3.8 Orthopedic and cast work. *At least one orthopedic or cast room shall be provided within the emergency service space. Provisions shall include storage for splints and other orthopedic supplies, traction hooks, image viewing capability and examination lights. If a sink is used for the disposal of plaster of paris, a plaster trap shall be provided. The clear floor space for this area shall be a minimum of 180 square feet (16.7 m^2).*

1224.33.3.9 Poison Control Center and EMS communications center. *Communication connections shall be provided as required under Section 1224.33.2.6. The communications center may be a part of the staff work and charting area.*

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1224.33.3.10 Emergency equipment storage space. *Equipment and supply storage shall be provided as required under Section 1224.33.2.3.*

1224.33.3.11 Patients' toilet room. *A patient toilet room with a lavatory shall be immediately accessible to the treatment room(s). Where there are more than eight treatment stations, a minimum of two toilet rooms, with a lavatory in each toilet room, shall be required.*

1224.33.3.12 Storage. *Provide rooms for clean, soiled or used supplies.*

1224.33.3.12.1 Soiled workroom or soiled holding room. *See Section 1224.4.4.7. This room is for the exclusive use of the emergency service space.*

1224.33.3.12.2 Clean utility room. *See Section 1224.4.4.6.*

1224.33.3.13 Administrative center or nurse station for staff work and charting. *These areas shall have space for counters, cabinets and shall be provided with handwashing stations. They may be combined with or include centers for reception and communication.*

1224.33.3.14 Medication preparation room. *A minimum of one medication preparation room shall be provided in accordance with Section 1224.4.4.4.1. Self-contained medication dispensing units may be provided in addition.*

1224.33.3.15 Staff lounge. *A staff lounge shall be located within the Emergency Department.*

1224.33.3.16 Staff clothing change areas. *Appropriate areas shall be provided for male and female staff working within the emergency service space. The areas shall contain lockers, showers, toilets and handwashing stations.*

1224.33.3.17 Housekeeping room. *A housekeeping room, compliant with Section 1224.4.15, shall be located within the unit and dedicated to the emergency service space.*

1224.33.3.18 Airborne infection isolation exam/treatment room. *If provided shall comply with the requirements of Section 1224.4.4.1.3.*

1224.33.3.19 Secured holding room. *When a secure holding room is provided, it shall meet the following requirements. The location of the secure holding room(s) shall facilitate staff observation and monitoring of patients in these areas. The secure holding room shall have a minimum clear floor area of 60 square feet (5.57 square meters) with a minimum wall length of 7 feet (2.13 meters) and a maximum wall length of 11 feet (3.35 meters). This room shall be designed to prevent injury to patients:*

1. *All finishes, light fixtures, vents, diffusers and fire protection/alarm components shall be tamper resistant and ligature resistant.*
2. *There shall not be any electrical outlets, medical gas outlets or similar devices.*
3. *There shall be no sharp corners, edges or protrusions, and the walls shall be free of objects or accessories of any kind.*
4. *Patient room doors shall swing out and shall have hardware on the exterior side of the door only. The minimum width shall be 44 inches (1120 mm).*
5. *A small impact-resistant view panel or window shall be provided in the door for discreet staff observation of the patient.*

1224.33.4 Comprehensive Emergency Medical Service. *When 24-hour comprehensive emergency service is to be provided, an Emergency Department shall be provided. At a minimum, all the provisions of Stand-by Emergency Service under Section 1224.33.2, the provisions of Basic Emergency Service under Section 1224.33.3, and all of the following shall be provided:*

1224.33.4.1 Triage stations. *In addition to the requirements of Section 1224.33.3.3, the triage area shall include triage station(s) with the following minimum requirements:*

1. *100 square feet (9.29 m^2) minimum clear floor area for each private triage room and 80 square feet (7.4 m^2) minimum clear floor area for each station in open-bay triage areas.*
2. *Provisions for patient privacy.*
3. *Handwashing station in each triage room. In open-bay triage areas, one handwashing station shall be provided for every four triage stations.*
4. *Immediate access to emergency call and code call stations.*
5. *Medical gas outlets for triage areas in compliance with Table 1224.4.6.1.*

1224.33.4.2 Fast-track area. *A fast-track area may be used for treating patients presenting simple and less serious conditions. If a fast-track area is provided, it shall meet the following requirements:*

1. *Space requirements – each fast-track room shall have a minimum 100 square feet (9.29 m^2) of clear floor area. In open-bay fast-track areas, each station shall have a minimum 80 square feet (7.4 m^2) of clear floor area.*
2. *Each patient care station shall include a work/documentation counter and an examination light.*
3. *Each fast-track room shall include a handwashing station. In open-bay fast-track areas, one handwashing station shall be provided for every four beds.*
4. *Provisions for patient privacy.*
5. *Storage areas for supplies and medication.*
6. *A separate procedure room may be provided. It shall have a minimum clear floor area of 120 square feet (11.15 m^2).*

1224.33.4.3 Pre-screening stations. *A pre-screening area may be used prior to admission to the Emergency Department. If pre-screening is provided, each station must have a minimum of 80 square feet (7.4 m^2) of clear floor area, a handwashing station,*

documentation counter and a storage cabinet. In open bay pre-screening areas, one handwashing station shall be provided for every four patient stations. Pre-screening stations, whether private rooms or open bays, are considered a part of the waiting area and must meet the same ventilation requirements.

1224.33.4.4 Diagnostic service areas. *Radiological/Imaging services shall be readily accessible. The Emergency Department shall be supported by Clinical Laboratory services. A STAT lab may be provided within the emergency medical service space in addition to more comprehensive support provided by the Clinical Lab.*

1224.33.4.5 On-call room(s). *Provisions shall be made to accommodate on-call sleeping room(s) for physicians and/or medical staff within the Emergency Department.*

1224.33.4.6 Police and press room. *Provisions shall be made to accommodate police briefing/debriefing and press releases. This may be located outside the Emergency Department.*

1224.33.5 Other space considerations.

1224.33.5.1 Observation units. *Observation rooms for the monitoring of patients up to 24 hours may be provided as a distinct unit within, the emergency department. If provided the unit shall have the following:*

1. *Handwashing stations shall be provided in each patient room and for each four treatment stations, and for each major fraction thereof. These shall be uniformly distributed to provide equal access from each patient station. Handwashing stations shall be directly accessible to nurse stations and patient care areas.*
2. *Each patient station shall provide space at each bedside for visitors and provision for visual privacy from casual observation by other patients and visitors. Single station rooms shall have a minimum of 120 square feet (11.15 m^2) of clear floor area. Multiple-station rooms shall provide a minimum of 80 square feet (7.43 m^2) per patient station with a minimum 8-foot width (2438 mm). A minimum distance of 3 feet (914 mm) between the sides and any wall or any other fixed obstruction shall be provided. A minimum distance of 3 feet (914 mm) shall be provided between beds and 4 feet (1219 mm) at the foot of each bed to permit the passage of equipment and beds. Patient gurneys shall be separated from adjoining patient stations by curtains.*
3. *One toilet room shall be provided for each six treatment stations and for each major fraction thereof.*
4. *An administrative center/nurse station, in compliance with Section 1224.4.4.2, positioned to allow staff to observe each patient care station or room.*
5. *A nourishment area in compliance with Section 1224.4.4.5.*

1224.34 NUCLEAR MEDICINE.

1224.34.1 General. *If nuclear medicine is provided, the following shall be provided:*

1224.34.1.1 Radiation protection. *A certified physicist shall specify the type, location and amount of radiation protection to be installed in accordance with final approved department layout and equipment selection. A physicist report shall also address dosing areas and circulation paths of dosed patients, including within multi-bay scanner rooms. Radiation protection requirements shall be incorporated into the construction documents and comply with Chapter 31C and the requirements of California Radiation Control Regulations, California Code of Regulations, Title 17, Division 1, Chapter 5, and Subchapter 4.*

1224.34.1.2 Nuclear medicine room. *Shall be sized to accommodate the equipment and a gurney.*

When provided, the following facilities shall meet the requirements below:

1224.34.1.2.1 Scintigraphy (Gamma Camera) Facilities. *Shall include the following:*

1. *Scanner room. The scanner room shall provide a minimum clearance of 4 feet (1218 mm) at each side and the foot of the table.*
2. *Handwashing stations shall be provided throughout the gamma camera suite at locations of patient contact and at locations where radiopharmaceutical materials are handled, prepared or disposed of.*

1224.34.1.2.2 Positron Emission Tomography (PET). *Shall include the following:*

1. *Scanner room shall provide a minimum clearance of 4 feet (1218 mm) at each side and the foot of the table. Additional space shall be provided when PET is combined with CT and include compliance with Section 1224.18.3 and shielding requirements in Section 1224.34.1.1.*
2. *Cyclotron room. Where radiopharmaceuticals are prepared on-site, a cyclotron shall be provided. Cyclotron facilities shall be located in access-restricted areas. Shielding requirements for cyclotron facilities shall comply with Section 1224.34.1.1.*
3. *Control room. If a control room is required based on the physicist's report, it shall be provided with a full direct view of the patient in the PET scanner.*
4. *Patient uptake/cool-down room. A shielded room with access to a dedicated patient toilet, to accommodate radioactive waste, and lavatory shall be provided.*
5. *Handwashing stations shall be provided throughout the PET suite at locations of patient contact and at locations where radiopharmaceutical materials are handled, prepared or disposed of.*
6. *Pre-procedure patient care and recovery area shall be provided to accommodate at least two stretchers. This area shall comply with Section 1224.34.2.6.*
7. *Imaging equipment room shall be provided in support of the equipment provided.*

8. *Contaminated (hot) soiled holding shall be provided and operationally integrated to minimize incidental exposure to ionizing radiation.*

1224.34.1.2.3 Single-Photon Emission Computed Tomography (SPECT) Facilities. *When provided shall include the following:*

1. *Scanner room shall provide a minimum clearance of 4 feet (1218 mm) at each side and the foot of the table. Additional space shall be provided when SPECT is combined with CT and include compliance with Section 1224.18.3 and shielding requirements in Section 1224.34.1.1. In multi-bay scanner rooms, a minimum clearance of 4 feet (1218 mm) shall be provided between each scanner and any mobile screen used between bays.*
2. *If a control room is required based on the physicist's report, it shall be provided with a full view of the patient in the SPECT scanner.*
3. *Imaging equipment room shall be provided in support of the equipment provided.*
4. *Handwashing stations shall be provided throughout the SPECT suite at locations of patient contact and at locations where radiopharmaceutical materials are handled, prepared or disposed of.*

1224.34.1.3 Radiopharmacy. *If radiopharmaceutical preparation is performed, an area adequate to house a radiopharmacy shall be provided with appropriate shielding. This area shall include adequate space for storage of radionuclides, chemicals for preparation, dose calibrators and record keeping. If preprepared materials are used, storage and calculation area may be considerably smaller than that for on-site preparation. Space shall provide adequately for dose calibration, quality assurance and record keeping. The area may still require shielding from other portions of the facilities.*

1224.34.2 Support areas for nuclear medicine services. *The nuclear medicine area shall provide the following support areas. If nuclear medicine is provided within the imaging department, compatible areas may be shared with other imaging modalities:*

1224.34.2.1 Entrance. *Space shall be adequate to permit entry of gurneys, beds, and able to accommodate imaging equipment, electronic consoles, and if present, computer terminals.*

1224.34.2.2 Cleanup. *Provisions for cleanup shall be located within the service space and be readily accessible. They shall include a service sink or floor receptacle as well as storage space for equipment and supplies.*

1224.34.2.3 Consultation. *A consultation area may be provided.*

1224.34.2.4 Waiting. *Waiting areas shall be provided out of traffic, under staff control. If the department is routinely used for outpatients and inpatients at the same time, separate waiting areas shall be provided with screening or visual privacy between the waiting areas.*

1224.34.2.5 Dose administration area. *Provide a dose administration area that is immediately accessible to the preparation area. Since as much as several hours may elapse for the dose to take effect, the area shall provide for visual privacy from other areas.*

1224.34.2.6 Pre-procedure/holding area. *A pre-procedure/holding area for patients on gurneys or beds shall be provided out of traffic and under control of staff and may be combined with the dose administration area with visual privacy between the areas.*

1224.34.2.7 Patient dressing rooms. *Patient dressing rooms shall be immediately accessible to the waiting area and procedure rooms. Each dressing room shall include a seat or bench, a mirror, and provisions for hanging patients' clothing and for securing valuables.*

1224.34.2.8 Patient toilet room(s). *Patient toilet rooms shall be reserved for nuclear medicine patients and shall be immediately accessible to waiting and procedure rooms.*

1224.34.2.9 Staff toilet rooms. *Staff toilet rooms shall be readily accessible to the nuclear medicine laboratory.*

1224.34.2.10 Handwashing stations. *Handwashing stations shall be located within each procedure room.*

1224.34.2.11 Control desk and reception.

1224.34.2.12 Storage area for clean linen.

1224.34.2.13 Soiled and contaminated material. *Provisions with handwashing stations shall be made for holding soiled material. Separate provisions shall be made for holding contaminated material.*

1224.34.2.14 Hot lab for scintigraphy (gamma camera), PET and SPECT facilities. *A securable area or room shall be provided in which radiopharmaceuticals can be safely stored and doses can be calculated and prepared.*

1. *A single hot lab shall be permitted to serve multiple scanners and nuclear medicine modalities.*
2. *The hot lab shall be shielded in compliance with Section 1224.34.1.1.*
3. *A source storage area, a dose area and a storage area for syringe shields shall be provided.*

1224.34.3 Radiotherapy service space.

1224.34.3.1 Radiation therapy space. *If radiation therapy is provided, the following shall be accommodated:*

1. *Patient reception and waiting areas.*
2. *Space for medical and physics staff functions.*
3. *Space for equipment and supplies.*
4. *Housekeeping room.*
5. *Direct access to space provided for radiation measurement and calibration equipment, including a calibration constancy instrument and access to a secondary standard dose meter.*

5.1. *A megavoltage treatment unit capable of delivering x-rays or gamma rays of effective energy 500 KeV or more and conforming to the requirements of Chapter 31C and the California Radiation Control Regulations, California Code of Regulations, Title 17, Division 1, Chapter 5, Subchapter 4.*

5.2. *Access to a medium voltage or superficial treatment unit delivering 500 KeV or less, but otherwise having the same functional characteristics as the above mega-voltage units and conforming to the requirements of Chapter 31C and the California Radiation Control Regulations, California Code of Regulations, Title 17, Division 1, Chapter 5, Subchapter 4.*

5.3. *Direct access to space provided for brachytherapy equipment which shall meet the requirements of Chapter 31C and the California Radiation Control Regulations, California Code of Regulations, Title 17, Division 1, Chapter 5, Subchapter 4.*

5.4. *Shielding of the rooms shall meet the requirements of Chapter 31C and the California Radiation Control Regulations. California Code of Regulations, Title 17, Division 1, Chapter 5, Subchapter 4.*

1224.34.3.2 Radiation protection. *Cobalt, linear accelerators, hot lab and high dose rate brachytherapy rooms and simulation rooms require radiation protection. All rooms that provide radiation treatment shall be appropriately shielded. A certified physicist shall specify the type, location and amount of protection to be installed in accordance with final approved department layout and equipment selection. Radiation protection requirements shall be incorporated into the construction documents and comply with Chapter 31C and the requirements of California Radiation Control Regulations, California Code of Regulations, Title 17, Division 1, Chapter 5 and Subchapter 4.*

1224.34.3.3 Room sizes. *Rooms shall be sized as follows:*

1. *Cobalt rooms and linear accelerators shall be sized in accordance with equipment requirements and shall accommodate a gurney for litter borne patients. Layouts shall provide for preventing the escape of radioactive particles. Openings into the room, including doors, ductwork, vents and electrical raceways and conduits, shall be baffled to prevent direct exposure to other areas of the facility.*
2. *Simulator, accelerator and cobalt rooms shall be sized to accommodate the equipment with patient access on a gurney, medical staff access to the equipment and patient, and service access.*
3. *Where a table is used, the room shall be sized to provide a minimum clearance of 4 feet (1218 mm) on three sides of the table to facilitate bed transfer and provide access to the patient. The door swing shall not encroach on the equipment space, patient circulation space or transfer space.*
4. *Minimum room size shall be 260 square feet (24.15 m^2) for the simulator room; 680 square feet (63.17 m^2), including the maze, for accelerator rooms; 200 square feet (18.58 m^2) for brachytherapy rooms; and 450 square feet (41.81 m^2) for cobalt rooms.*

1224.34.3.4 General support area. *The following areas shall be provided:*

1. *A gurney hold area adjacent to the treatment rooms, screened for privacy and combined with a seating area for outpatients.*
2. *Exam or treatment room shall be provided with a minimum of 100 square feet (9.29 m^2) with a minimum dimension of 8 feet (2438 mm). Each exam room shall be equipped with a handwashing station.*

   Exceptions:

   1. *Where renovation of existing treatment rooms is undertaken in facilities built under the 2001 or prior California Building Code, treatment rooms shall have no less than 80 square feet (7.43 m^2) of clear floor area.*
   2. *Darkroom is optional. If provided, shall be readily accessible to the treatment room(s)*
   3. *Patient gowning area with provision for safe storage of valuables and clothing and with direct access to toilet room(s). At least one space shall be large enough for staff-assisted dressing.*
   4. *Film files area is optional. If provided shall have storage for unprocessed film.*

1224.34.4 Additional support areas for linear accelerator.

1224.34.4.1 *Mold room with exhaust hood and handwashing fixture.*

1224.34.4.2 *Block room with storage. The block room may be combined with the mold room.*

1224.34.5 Additional support areas for cobalt room.

1224.34.5.1 Hot lab. *A hot lab shall be provided in accordance with Section1224.34.2.14.*

1224.34.6 Radiosurgery suite. *If radiosurgery (gamma knife/cyber knife) is provided, the following shall be provided:*

1224.34.6.1 General. *The radiosurgery suite shall be located near the imaging services suite to facilitate image acquisition prior to radiosurgery treatment. Location of gamma knife or cyber knife treatment rooms in a radiation therapy suite shall be permitted.*

1224.34.6.2 Radiosurgery treatment rooms. *Radiosurgery (gamma knife/cyber knife) treatment rooms shall provide a minimum clearance of 4 feet (1218 mm) shall be provided on all sides of the treatment table/chair. The door shall not encroach on the equipment or on patient circulation or transfer space. A handwashing station shall be provided in each radiosurgery treatment room.*

1224.34.6.3 Pre-procedure/recovery accommodations. *If provided, pre-procedure/recovery patient care stations shall meet the following requirements:*

1. *Pre-procedure and recovery area(s) shall be immediately accessible to procedure rooms and separate from corridors. The pre-procedure and recovery patient area or room shall be arranged to permit visual observation of the patient by*

staff before and after the procedure. Bays, cubicles or single-bed rooms shall be permitted to serve as patient care stations.

2. *Area. Where open bays are used, each patient care station shall have a minimum clear floor area of 80 square feet (7.43 m^2).*
3. *Clearances. Each bay or cubicle shall have a minimum clearance of 3 feet (914 mm) between walls or partitions and the sides and foot of gurneys or patient beds. Each bay shall have a minimum clearance of 4 feet (1218 mm) between sides of gurneys or patient beds. A minimum width of 6 feet (1829 mm) of access/circulation outside the curtain shall be provided.*
4. *Patient privacy. Provisions such as cubicle curtains shall be provided for patient privacy.*
5. *Handwashing station. A handwashing station shall be provided within the pre-procedure/recovery area.*

1224.34.6.4 Support areas for radiosurgery treatment rooms. *The following shall be provided:*

1. *Space for sterilization of head-frames.*
2. *Area for target planning.*
3. *Medication station.*
4. *Nourishment area.*
5. *Head-frame storage.*
6. *Toilet room(s) for patients, staff and the public.*
7. *Area for sedation of pediatric patients.*

1224.35 REHABILITATION THERAPY DEPARTMENT. *Where two or more rehabilitation services are provided, facilities and equipment between services may be shared. Rehabilitation therapy services may be provided as part of a dedicated inpatient nursing unit in a rehabilitation center or as outpatient services, or both.*

1224.35.1 Rehabilitation center space. *If provided, a rehabilitation center space shall be designed to meet the requirements of Section 1224.14, except as follows:*

1. *Patient bedrooms shall contain a minimum of 110 square feet (10.22 m^2) of clear floor area per bed, exclusive of toilet room(s), closets, lockers, wardrobes, alcoves or vestibules, with greater space provided for special needs such as circ-o-electric beds.*
2. *Space for group dining shall be provided at the minimum rate of 20 square feet (1.86 m^2) per bed.*
3. *Space for group recreation or patient's lounge shall be provided at the minimum rate of 20 square feet (1.86 m^2) per bed.*
4. *Space for staff conferences, patient evaluation and progress reports.*
5. *A classroom space.*
6. *Outpatient rehabilitation services shall be provided. An examination and treatment room shall be adjacent or directly accessible to an office for the physician in charge of the outpatient service.*
7. *For outpatient rehabilitation services, a patient waiting area with access to telephone, drinking fountain and men's and women's toilet room facilities shall be in or adjacent to the rehabilitation outpatient service area. Outpatients shall not traverse an inpatient nursing unit.*
8. *Access to an outside area to be used for therapeutic procedures for patients.*
9. *At least one training toilet room in each patient unit with minimum dimensions of 5 feet by 6 feet (1524 mm by 1829 mm).*
10. *Patient bathtubs, where provided, of standard height and located to provide access to both sides and one end of the tub.*
11. *Patient showers, where provided in centralized bathing facilities, shall comply with Section 11B-608.2.2, no dimension of which shall be less than 4 feet (1219 mm), be equipped with handrails, privacy curtains, and designed for ease of accessibility. The floor shall be sloped to provide drainage.*
12. *As a minimum, physical therapy, occupational therapy and speech therapy shall be provided. The space for these individual services shall be designed to meet the requirements of Sections 1224.35.2, 1224.35.3 and 1224.35.4, respectively.*

1224.35.2 Physical therapy service space. *If physical therapy is part of the service, the following shall be included:*

1. *The minimum floor area for a physical therapy space shall be 300 square feet (27.87 m^2) with no dimensions less than 12 feet (3658 mm) in addition to any provided therapy stations. Each individual patient care station shall have a minimum clear floor area of 60 square feet (5.57 m^2), except individual patient care stations formed with permanent partitions shall have a minimum clear floor area of 80 square feet (7.43 m^2). Each individual patient care station shall have privacy screens or curtains.*
2. *Handwashing stations for staff shall be provided in each treatment room. At least one handwashing station shall be provided for every four patient care stations, and for every major fraction thereof, in an open treatment area. One handwashing station may serve several treatment stations.*
3. *Exercise area and facilities.*
4. *Clean linen and towel storage.*
5. *Storage for equipment and supplies.*
6. *Separate storage for soiled linen, towels and supplies.*

   Exception: *When approved by the licensing agency small or rural hospitals are exempt from Sections 1224.35.2.1 through 1224.35.2.6.*

1224.35.3 Occupational therapy service space. *If this service is provided, the following shall be included:*

1. *Work areas and counters suitable for wheelchair access.*
2. *Handwashing stations.*
3. *Storage for supplies and equipment.*
4. *An area for teaching daily living activities shall be provided. It shall contain an area for a bed, kitchen counter with appliances and sink, bathroom and a table/chair.*

1224.35.4 Speech pathology and/or audiology service space. *If a speech pathology service is provided, space shall be provided for:*

1. *Tables and chairs to conduct interviews, consultations and treatment, and to accommodate patients in wheelchairs and stretchers.*
2. *A waiting area with access to public toilet room(s) if outpatients are being served.*
3. *Handwashing stations.*
4. *Testing unit. If an audiology service is provided, there shall be, in addition to Items 1, 2 and 3 above, a minimum of one two-room testing unit that meets the American National Standards Institute, ANSI/ASA S-3.1, 1999, (2008) Maximum Permissible Ambient Noise Levels for Audiometric Test Rooms.*

1224.36 RENAL DIALYSIS SERVICE SPACE (ACUTE AND CHRONIC).

1224.36.1 General. *If provided, renal dialysis service shall comply with the following:*

1224.36.2 Treatment area.

1224.36.2.1 Location. *The treatment area may be an open area and shall be separate from administrative and waiting areas.*

1224.36.2.2 Nurse station(s). *Shall be located within the dialysis treatment area and designed to provide visual observation of all patient stations.*

1224.36.2.3 Individual patient treatment areas. *Shall contain at least 80 square feet (7.44 m^2). There shall be at least a 4-foot (1219 mm) space around and between beds and/or lounge chairs.*

1224.36.2.4 Handwashing stations. *Handwashing stations shall be directly accessible to the nurse station and to patient treatment areas. Handwashing stations shall be provided for each four treatment stations, and for each major fraction thereof. These shall be uniformly distributed to provide equal access from each patient station.*

1224.36.2.5 Privacy. *The open unit shall be designed to provide privacy for each patient.*

1224.36.2.6 Bloodborne infection isolation room. *A minimum of one bloodborne infection isolation room of at least 120 square feet (11.15 m^2) of clear floor space shall be provided for patients. This room shall contain a counter and handwashing station.*

1224.36.2.7 Medication station. *There shall be a medication station for the dialysis center. The medication station shall comply with the provisions of Section 1224.4.4.4.*

1224.36.2.8 Home training. *If provided in the unit, a private treatment area of at least 120 square feet (11.15 m^2) shall be provided for patients who are being trained to use dialysis equipment at home. This room shall contain a counter, a handwashing station and a separate drain for fluid disposal.*

1224.36.2.9 Examination room. *An examination room with a handwashing station shall be provided with at least 100 square feet (9.29 m^2).*

1224.36.2.10 Clean utility room. *A clean utility room shall be provided. If the room is used for preparing patient care items, it shall contain a work counter, a handwashing station and storage facilities for clean and sterile supplies. If the room is used only for storage and holding as part of a system for distribution of clean and sterile materials, the work counter and handwashing fixture may be omitted. Soiled and clean utility rooms or holding rooms shall be separated and have no direct connection.*

1224.36.2.11 Soiled utility room. *A soiled workroom shall be provided and contain a sink, handwashing station, work counter, storage cabinets, waste receptacles and a soiled linen receptacle.*

1224.36.2.12 Reprocessing room. *If dialyzers are reused, a reprocessing room is required and sized to perform the functions required and include one-way flow of materials from soiled to clean with provisions for a refrigerator (temporary storage or dialyzer), decontamination/cleaning areas, sinks, processors, computer processors and label printers, packaging area and dialyzer storage and disinfectants cabinets.*

1224.36.2.13 Nourishment station. *If a nourishment station for the dialysis service is provided, the nourishment station shall contain a sink, a work counter, a refrigerator, storage cabinets and equipment for serving nourishments as required.*

1224.36.2.14 Housekeeping room. *Provide a housekeeping room that is immediately accessible to, and for the exclusive use of the unit.*

1224.36.2.15 Repair room. *If required, an equipment repair and breakdown room shall be equipped with a handwashing fixture, deep service sink, work counter and storage cabinet. Needs water supply and drain connection for testing machines.*

1224.36.2.16 Supplies. *Supply areas or supply carts shall be provided.*

1224.36.2.17 Storage. *Storage space shall be available for wheelchairs and gurneys, if gurneys are provided, out of direct line of traffic.*

1224.36.2.18 Clean linen storage. *A clean linen storage area shall be provided. This may be within the clean utility room, a separate closet or an approved distribution system. If a closed cart system is used, storage may be in an alcove. It must be out of the path of normal traffic and under staff control.*

1224.36.2.19 Mixing room. *Each facility using a central batch delivery system shall provide, either on the premises or through written arrangements, individual delivery systems for the treatment of any patient requiring special dialysis solutions. The mixing room shall also include a sink, storage space and holding tanks.*

1224.36.2.20 Water treatment room. *The water treatment equipment shall be located in an enclosed room.*

1224.36.2.21 Patient toilet. *A patient toilet room with a lavatory shall be provided.*

1224.36.3 Ancillary facilities.

1224.36.3.1 Staff lounge, lockers and toilet(s). *Space shall be available for male and female personnel for staff clothing change area and lounge. The areas shall contain lockers, shower, toilet(s) and handwashing stations.*

1224.36.3.2 Patient storage. *Storage for patients' belongings shall be provided.*

1224.36.3.3 Waiting room. *A waiting room, toilet room(s) with handwashing stations, drinking fountain, public telephone and seating accommodations for waiting periods shall be available or accessible to the dialysis unit.*

1224.36.3.4 Administrative services. *Provide office and clinical work space.*

1224.37 RESPIRATORY THERAPY SERVICE SPACE. *If respiratory service is provided, the following elements shall be included:*

1. ***Storage for equipment and supplies.***
2. ***Space and utilities for cleaning and disinfecting equipment.*** *Provide physical separation of the space for receiving and cleaning soiled materials from the space for storage of clean equipment and supplies. Appropriate local exhaust ventilation shall be provided if gluteraldehyde or other noxious disinfectants are used in the cleaning process. This space may be co-located with other reprocessing functions within the hospital.*
3. ***Additional facilities.*** *If respiratory services such as testing and demonstration for outpatients are part of the program, additional facilities and equipment shall be provided including but not limited to:*
    - *3.1. Patient waiting.*
    - *3.2. A reception and control station.*

1224.38 INTERMEDIATE-CARE SERVICE SPACE. *An intermediate-care service unit shall be housed in a separate and distinct nursing unit and shall comply with the applicable requirements of Section 1225.*

1224.39 OUTPATIENT SERVICE SPACE.

1224.39.1 Waiting area(s). *Provide with access to public toilet room facilities, a public telephone and a drinking fountain. These facilities may be shared with other services.*

1224.39.2 Outpatient surgery. *If outpatient surgery is performed in the out patient service space, the following shall be provided:*

1224.39.2.1 Operating rooms. *An operating room(s) with a minimum clear floor area of 270 square feet (25.08 m^2), no dimension of which shall be less than 15 feet (4572 mm).*

1224.39.2.2 Perioperative services. *Preoperative patient holding and postanesthesia recovery area(s) shall be provided which meet the requirements of Section 1224.16.*

1224.39.2.3 Service areas. *Each surgical unit shall provide the service areas required under Section 1224.15.3 as modified by the following:*

1224.39.2.3.1 Soiled workroom. *A separate soiled workroom separated from any surgical sterilizing facilities. The soiled workroom shall provide 24 square feet (2.2 m^2) per operating room up to eight operating rooms and shall have the minimum area of 48 square feet (4.5 m^2), with no dimension less than 6 feet (1829 mm).*

1224.39.2.3.2 Housekeeping. *A housekeeping room shall be provided for the exclusive use of outpatient surgery. It shall be directly accessible from the service area.*

1224.39.3 Gastrointestinal endoscopy. *If gastrointestinal endoscopy is performed in the outpatient service area, the endoscopy suite shall be divided into a minimum of three major functional areas: the procedure room(s), instrument processing room(s) and patient holding/preparation and recovery room or area and the following shall be provided:*

1224.39.3.1 Procedure room(s).

1224.39.3.1.1 Space requirements. *Procedure room shall have a minimum clear floor area of 200 square feet (18.6 m^2). Room arrangement shall permit a minimum clearance of 3 feet, 6 inches (1067 mm) at each side, head and foot of the gurney/table.*

1224.39.3.1.2 Handwashing stations. *A separate dedicated handwashing station with hands-free controls shall be provided in the procedure room.*

1224.39.3.2 Processing room.

1224.39.3.2.1 *Dedicated processing room(s) shall provide distinct areas for cleaning and decontaminating instruments. The cleaning area shall allow for flow of instruments from the contaminated area to the clean assembly area and then to storage.*

1224.39.3.2.2 *The decontamination area shall be equipped with the following:*

1. *Utility sink(s) shall be provided as appropriate to the method of decontamination used.*

2. *One freestanding handwashing station.*
3. *Work counter space(s).*
4. *Eyewash station.*

1224.39.3.3 Preoperative patient holding. *A preoperative patient holding area shall be provided in accordance with Section 1224.16.2.*

1224.39.3.4 Post-anesthesia recovery area. *A post- anesthesia recovery area shall meet the requirements of Section 1224.16.*

1224.39.3.5 Communication system. *A system for emergency communication shall be provided.*

1224.39.3.6 Service areas. *Each gastrointestinal endoscopy unit shall provide the support areas required under Section 1226.5.11.6 if not shared within the department.*

1224.39.4 CANCER TREATMENT/INFUSION THERAPY SERVICE SPACE.

1224.39.4.1 General. *If provided, cancer treatment/ infusion therapy service shall comply with the following:*

1224.39.4.2 Treatment area.

1224.39.4.2.1 Location. *The treatment area may be an open area and shall be separated from administrative and waiting areas.*

1224.39.4.2.2 Nurse station(s). *Shall be located within the cancer treatment/infusion therapy area and designed to provide visual observation of all patient stations.*

1224.39.4.2.3 Individual patient treatment areas. *Shall contain at least 80 square feet (7.4 m^2).*

There shall be at least a 4-foot (1219 mm) space around and between beds and/or lounge chairs used for chemotherapy treatment/infusion.

1224.39.4.2.4 Handwashing stations. *Handwashing stations shall be directly accessible to the nurse station and patient treatment areas. Handwashing stations shall be provided for each four patient stations, and for each major fraction thereof. These shall be uniformly distributed to provide equal access from each patient station.*

1224.39.4.2.5 Privacy. *The open unit shall be designed to provide privacy for each patient.*

1224.39.4.2.6 Medication dispensing. *If provided, there shall be a medication dispensing station for the cancer treatment/infusion therapy area. A work counter and handwashing station shall be included in the area. Provisions shall be made for the controlled storage, preparation, distribution and refrigeration of medications.*

1224.39.4.2.7 Examination room. *An examination room with a handwashing station shall be provided with at least 100 square feet (9.29 m^2) of clear floor area.*

1224.39.4.2.8 Clean utility room. *A clean utility room shall be provided. If the room is used for preparing patient care items, it shall contain a work counter, a handwashing station and storage facilities for clean and sterile supplies. If the room is used for storage and holding as part of a system for distribution of clean and sterile materials, the work counter and handwashing station may be omitted. Soiled and clean utility rooms or holding rooms shall be separated and have no direct connection.*

1224.39.4.2.9 Soiled utility room. *A soiled workroom shall be provided and contain a sink, handwashing station, work counter, storage cabinets, waste receptacles and a soiled linen receptacle.*

1224.39.4.2.10 Nourishment station. *If nourishment station for the cancer treatment/infusion therapy service is provided, the nourishment station shall contain a sink, a work counter, a refrigerator, storage cabinets and equipment for serving nourishment as required.*

1224.39.4.2.11 Housekeeping room. *Provide a housekeeping room that is immediately accessible to and for the exclusive use of the unit.*

1224.39.4.2.12 Supplies. *Supply areas or supply carts shall be provided.*

1224.39.4.2.13 Storage. *Storage space shall be available for wheelchairs and gurneys. If gurneys are provided, they shall be out of the direct line of traffic.*

1224.39.4.2.14 Clean linen storage. *A clean linen storage area shall be provided. This may be within the clean utility room, a separate closet or an approved distribution system. If a closed cart system is used, storage may be in an alcove. It must be out of the path of normal traffic and under staff control.*

1224.39.4.2.15 Patient toilet. *A patient toilet room with a lavatory shall be provided.*

1224.39.4.3 Ancillary facilities.

1224.39.4.3.1 Staff lounge, lockers and toilets. *Space shall be available for male and female personnel for staff clothing change area and lounge. The areas shall contain lockers, toilets and handwashing stations.*

1224.39.4.3.2 Patient storage. *Storage for patients' belongings shall be provided.*

1224.39.4.3.3 Administrative services. *Office and clinical work space shall be provided.*

1224.39.4.3.4 Special design elements. *Decorative water features and fish tanks shall not be located inside cancer treatment/infusion therapy unit.*

1224.39.5 HYPERBARIC THERAPY SERVICE SPACE.

1224.39.5.1 General. *If provided, clinical hyperbaric oxygen therapy service space shall meet the requirements of the "Hyperbaric Facilities" chapter in NFPA 99: Health Care Facilities Code and shall comply with the following:*

1224.39.5.2 Hyperbaric chambers.

1224.39.5.2.1 Class A chamber (multi-place facilities).

1. ***Clearances.*** *There shall be a minimum clearance of 3 feet (914 mm) around the chamber. The area in front of the chamber entry designed for gurney or bed access shall have a minimum clearance of 8 feet (2438 mm) for gurney or bed approach. The area in front of the chamber entry designed for ambulatory or wheelchair access only shall have a minimum clearance of 5 feet (1524 mm) for wheelchair approach.*
2. ***Entries.*** *Chamber entries shall be provided with access ramps that are flush with the chamber entry doorway. Chamber entries not designed for gurney/bed access shall be a minimum of 3 feet (914 mm).*

1224.39.5.2.2 Class B chamber (mono-place facilities).

1. ***Clearances.*** *There shall be a minimum clearance of 3 feet (914 mm) around the chamber. A minimum clearance of 44 inches (1118 mm) shall be provided between the control sides of two chambers. The area in front of the chamber entry shall be designed for gurney or bed access with a minimum clearance of 8 feet (2438 mm) for gurney or bed approach.*
2. ***Oxygen.*** *An oxygen service valve shall be provided for each chamber.*

1224.39.5.3 Pre-procedure patient holding area(s). *In facilities with a Class A hyperbaric chamber or with three or more Class B chambers, a pre-procedure/patient holding area shall be provided to accommodate patients on gurneys or beds and sitting space for ambulatory patients. The area shall permit visual observation of the patient by nursing staff and be located out of traffic flow. Each gurney station shall be a minimum clear floor area of 80 square feet (7.43 m^2) and shall have a minimum clearance of 3 feet (914 mm) on the sides of the gurneys and the foot of the gurney. There shall be provisions for privacy such as cubicle curtains.*

1224.39.5.4 Medical gas station outlets. *Refer to Table 1224.4.6.1 Station Outlets for Oxygen, Vacuum (Suction) and Medical Air.*

1224.39.5.5 Support areas for the hyperbaric suite.

1224.39.5.5.1 Reception/control desk. *An administrative center/nurse station shall be provided within the hyperbaric suite.*

1224.39.5.5.2 Examination/treatment room(s). *Room(s) for individual consultation and treatment shall be provided and meet the requirements of Section 1224.4.4.1.*

1224.39.5.5.3 Clean linen storage. *A clean linen storage area shall be provided. This may be within the clean utility room, a separate closet or an approved distribution system. If a closed cart system is used, storage may be in an alcove. It must be out of the path of normal traffic and under staff control.*

1224.39.5.5.4 Clean supply room. *A clean supply room shall be provided and meet the requirements of Section 1224.4.4.6.1. This room may be omitted if the suite is served by a cart system.*

1224.39.5.5.5 Gas cylinder room. *The gas cylinder room shall provide space to house eight (H) cylinders and two gas manifolds, consisting of at least two (H) cylinders on each manifold.*

1224.39.5.5.6 Gurney and wheelchair storage. *Space for gurney and wheelchair storage shall be provided.*

1224.39.5.5.7 Housekeeping room. *A housekeeping room shall be provided and shall be immediately accessible to the hyperbaric suite.*

1224.39.5.5.8 Compressor room. *A compressor room shall be provided to house the chamber compressors, accumulator tanks and fire suppression system.*

1224.39.5.6 Support areas for staff. *Toilet rooms with a handwashing stations shall be immediately accessible to the hyperbaric suite for staff use.*

1224.39.5.7 Support areas for patients.

1224.39.5.7.1 Patient waiting area. *The patient waiting area shall be provided and meet the requirements of Section 1224.39.1.*

1224.39.5.7.2 Patient changing areas. *Changing area(s) for outpatients shall be provided for patient clothing and for securing valuables.*

1224.39.5.7.3 Patient toilet room. *A patient toilet room with a handwashing station shall be directly accessible to the hyperbaric suite.*

1224.39.6 OUTPATIENT OBSERVATION UNITS.

1224.39.6.1 General. *If provided, outpatient observation unit(s) shall comply with the following:*

1224.39.6.2 Location. *The unit shall be located outside of any inpatient unit and not part of the Emergency Department. Location shall be in compliance with Section 1224.4.3. Corridor systems shall connect the unit to all Basic and applicable Supplemental Services.*

1224.39.6.3 Signage. *The unit shall be marked with a sign identifying the unit as an outpatient unit. The signage shall use the term "outpatient" in the title of the designated area.*

1224.39.6.4 Patient care stations. *Each patient station shall provide minimum clear floor area that includes space at each bedside for visitors. Provisions for visual privacy from casual observation by other patients and visitors shall be provided. Patient care stations shall meet the following:*

1224.39.6.4.1 Space requirements:

1. *Single-station rooms: 110 square feet (10.2 m^2). A minimum distance of 3 feet (914 mm) shall be provided between the sides and foot of bed and any wall or other fixed obstructions.*
2. *Multi-station rooms or areas: 80 square feet (7.4 m^2) per patient station. A minimum distance of 3 feet (914 mm) shall be provided between beds and 4 feet (1219 mm) between the foot of beds, walls or other fixed obstructions for access/circulation.*

1224.39.6.4.2 Negative-pressure isolation room with anteroom. *Negative pressure isolation is optional. If provided, signage shall be labeled with the words "Negative-Pressure Room" on or adjacent to the anteroom side of the door between the isolation room and the anteroom. A separate anteroom shall be provided between the negative-pressure isolation room and the corridor, which shall constitute the primary entrance to the negative-pressure isolation room. This anteroom shall have a handwashing station, a work counter at least 3 feet (914 mm) long, cabinets and space to gown and to store clean and soiled materials. There shall be a view window from the anteroom to the isolation room and means to allow for airflow from the anteroom into the negative pressure isolation room. Doors shall be aligned to allow large equipment to be wheeled into the negative-pressure isolation room unless a second entry is provided. An adjoining patient toilet room shall be provided which has an emergency nurse call system, a lavatory and a toilet equipped with a bedpan flushing attachment with a vacuum breaker.*

1224.39.6.4.3 Handwashing station(s). *A handwashing station shall be provided at each nurse station.*

1224.39.6.4.4 Patient toilet room(s). *A minimum of one toilet room shall be provided for the use of patients. Patient toilet room(s) shall be equipped with a handwashing station and shall be immediately accessible to the observation unit(s) from the corridor.*

1224.39.6.5 Service areas. *Unless otherwise indicated, provisions for the services listed below shall be in or immediately accessible to each outpatient observation unit.*

1224.39.6.5.1 Nurse station. *A minimum of one nurse station shall be provided, in compliance with Section 1224.4.4.2. The distance between the nurse station entrance and the most remote patient station or room shall not exceed 90 linear feet (27,432 linear mm).*

1224.39.6.5.2 Nurse or supervisor office.

1224.39.6.5.3 Staff toilet room(s). *Readily accessible toilet room(s) provided for staff use.*

1224.39.6.5.4 Multipurpose room(s). *A minimum of one multipurpose room shall be provided for staff, patients and/or patients' families for uses such as patient conferences, reports, education, training sessions and consultation. Room(s) must be readily accessible to each outpatient observation unit. One such room may be shared and serve several units and/or departments.*

1224.39.6.5.5 Examination or treatment room(s). *Examination or treatment rooms are optional. If provided, examination and/or treatment rooms must be readily accessible, but may be shared with other units or compatible departments. Provisions shall be made to preserve patient privacy from observation from outside the exam room through an open door. The room shall have a minimum area of 80 square feet (7.4 m^2), the least dimension of which 8 feet (2438 mm).*

1224.39.6.5.6 Medication station(s). *Medication station(s) shall be provided, and in conformance with Section 1224.4.4.4.*

1224.39.6.5.7 Nourishment area. *A nourishment area, in compliance with Section 1224.4.4.5, shall be provided within the unit.*

1224.39.6.5.8 Clean utility room. *A clean utility/workroom shall be provided, and in conformance with Section 1224.4.4.6.*

1224.39.6.5.9 Soiled workroom. *A soiled workroom or soiled holding room shall be provided, and in conformance with Section 1224.4.4.7.*

1224.39.6.5.10 Clean linen storage. *Clean linen storage shall be provided. It may be within the clean utility room or a separate closet.*

1224.39.6.5.11 Ice machine. *An ice machine shall be provided for treatment and nourishment. Ice-making equipment may be in the clean utility room/holding room or at the nourishment station. Ice intended for human consumption shall be from self-dispensing icemakers.*

1224.39.6.5.12 Equipment storage. *Appropriate room(s) shall be provided for storage of equipment necessary for patient care. Equipment storage must be readily accessible but may be shared with other units and/or departments.*

1224.39.6.5.13 Gurneys and wheelchairs. *A storage room or alcove for gurneys and wheelchairs shall be provided and shall be a minimum of 15 square feet (1.39 m^2).*

1224.39.6.5.14 Emergency equipment storage. *Space shall be provided for emergency equipment that is under direct control of the nursing staff, such as a cardiopulmonary resuscitation crash cart. This space shall be directly accessible from the nursing station, but out of normal traffic.*

1224.39.6.5.15 Portable oxygen storage. *Space shall be provided for portable oxygen storage, and shall meet the requirements of Section 307 for allowable quantities and hazard group for fire separations. Portable oxygen storage may be omitted if station outlets per Table 1224.4.6.1 "observation unit" footnote 8 are provided.*

1224.39.6.5.16 Housekeeping room. *A housekeeping room must be readily accessible but may be shared with other units and/or departments.*

1224.40 SKILLED NURSING SERVICE SPACE. *If provided a skilled nursing service unit shall be housed in a separate and distinct nursing unit and shall comply with the applicable requirements of Section 1225.*

1224.41 SOCIAL SERVICE SPACE. *If provided, the social service space shall include office or other space for privacy in interviewing, telephoning and conducting conferences.*

1224.42 CHEMICAL DEPENDENCY RECOVERY HOSPITAL. *Pursuant to Health and Safety Code Section 1250.3, general acute care hospitals may provide chemical dependency recovery services in a distinct part. If provided, the chemical dependency recovery hospital, unit or services shall comply with Section 1229.*

SECTION 1225 [OSHPD 2]-SKILLED NURSING AND INTERMEDIATE-CARE FACILITIES

1225.1 Scope. *The provisions of this section shall apply to skilled nursing and intermediate-care facilities, including distinct part skilled nursing and intermediate-care services of a general acute-care or acute psychiatric hospital license, provided either is in a separate unit or a freestanding building. Skilled nursing facilities and intermediate-care facilities shall provide all common elements and support services. The required services for skilled nursing and intermediate-care facility licensure: physician, skilled nursing, dietary, pharmaceutical services and activity program shall be provided. At the option of the provider, the medical model or the household model may be used.*

1225.1.1 Small house skilled nursing facilities. *Skilled nursing facilities participating in the Small House Nursing Facilities Pilot Program established by and in conformance with Section 1323.5 of the California Health and Safety Code, shall meet all the provisions of Section 1225.4 Common Elements and Section 1225.5.2 Household Model applicable to small house skilled nursing facilities.*

1225.1.2 Subacute care. *Patient rooms providing subacute care shall comply with Section 1225.5.1.2. Equipment and components supporting subacute bed(s) shall have special seismic certification per Section 1705. Electrical requirements shall comply with California Electrical Code Article 517.*

Note: *Construction documents for OSHPD 2 buildings without subacute beds shall explicitly state that the skilled nursing facility or intermediate care facility does not admit patients needing sustained electrical life support equipment*

1225.2 Application. *New buildings and additions, alterations or repairs to existing buildings subject to licensure shall comply with applicable provisions of the California Electrical Code, California Mechanical Code, California Plumbing Code, California Fire Code (Parts 3, 4, 5 and 9 of Title 24), and this section.*

Exception: *See Section 1224.2.*

1225.2.1 Services/systems and utilities. *Services/systems and utilities shall only originate in, pass through or under structures which are under the jurisdiction of the Office of Statewide Hospital Planning and Development (OSHPD).*

1225.2.2 Means of egress. *Means of egress shall only pass through structures that are under the jurisdiction of the Office of Statewide Hospital Planning and Development (OSHPD).*

1225.3 Definitions. Refer to Section 1224.3.

1225.4 COMMON ELEMENTS.

1225.4.1 NURSING SERVICE SPACE.

1225.4.1.1 Nurse station. *A nurse station in free-standing skilled nursing and intermediate-care facilities shall be provided within each nursing unit. Nurse stations shall be designed to serve no more than 60 beds.*

1225.4.1.1.1 Components. *Nurse stations shall be provided with a cabinet, a desk, space for records, a bulletin board, a telephone, a specifically designated, lockable and illuminated medicine storage compartment and a handwashing station. If a separate medicine room is provided, it shall have a lockable door and a sink. This sink cannot replace the required nurse station handwashing fixture.*

1225.4.1.1.2 Size. *Nurse stations serving 25 or less beds shall have a minimum floor area of 100 square feet (9.29 m^2). Nurse stations servicing more than 25 beds shall have a minimum floor area of 125 square feet (11.6 m^2). The minimum dimension of any nurse station shall not be less than 8 feet (2438 mm).*

1225.4.1.1.3 Distance. *In free-standing skilled nursing and intermediate-care facilities, the distance between the nurse station entrance and the center of the doorway of the most remote patient bedroom shall not exceed 150 linear feet (45,720 mm).*

Exception: *The 150-foot (45,720 mm) limit does not apply to distinct part skilled nursing and intermediate-care services provided as a separate unit in a general acute-care hospital or acute psychiatric hospital.*

1225.4.1.2 Room identification. *Each patient room shall be labeled with an identification number, letter or combination of the two.*

Exception: *Small house skilled nursing facilities.*

1225.4.1.3 Utility rooms. *Utility rooms shall be provided in each nursing unit. Soiled and clean utility or holding rooms shall be separated and have no direct connection.*

1225.4.1.3.1 Clean utility room. *If the room is used for preparing patient care items, it shall contain a work counter, a handwashing station and storage facilities for clean and sterile supplies. If the room is used only for storage and holding as part of a system for distribution of clean and sterile materials, the work counter and handwashing station may be omitted.*

1225.4.1.3.2 Soiled workroom or soiled holding room. *This room shall be separate from the clean utility room. The soiled workroom/utility room shall contain a clinical sink (or equivalent flushing-rim fixture). The room shall contain a handwashing station. The above fixtures shall both have a hot and cold mixing faucet. The room shall have a work counter and space for separate covered containers for soiled linen and waste. Rooms used only for temporary holding of soiled material may omit the clinical sink and work counter. If the flushing-rim clinical sink is eliminated, facilities for cleaning bedpans shall be provided elsewhere.*

1225.4.1.4 Visual privacy. *A method of assuring visual privacy for each patient shall be provided in patient rooms and in tub, shower and toilet rooms.*

1225.4.1.5 Treatment or exam room. *If provided, the treatment or exam room shall comply with all of the requirements of Section 1224.4.4.*

1225.4.1.6 Toilet room and bath facilities. *Separate toilet room facilities shall be provided for the use of patients, staff and the public. Fixtures serving individual patient rooms shall not be considered as meeting the required ratios for bedrooms not served by individual adjoining toilet room or bathrooms.*

1225.4.1.6.1 Grab bars. *Each toilet, bathtub and shower serving patients shall be provided with conveniently located grab bars.*

1225.4.1.6.2 Toilet rooms. *One patient toilet room shall serve no more than two patients. The toilet room shall contain a toilet, a handwashing station, a mirror and individual storage for the personal effects of each patient.*

Exception. *Where renovation of existing patient rooms is undertaken in facilities built under the 2013, or prior, California Building Code, each toilet room may continue to serve up to the number of beds previously served, but not more than two patient rooms or eight beds.*

1225.4.1.6.3 Bathroom facilities. *Bathtubs or showers shall be provided at a ratio of 1:20 patients, and for each major fraction thereof. A separate private toilet shall be provided that is directly accessible to each multi-bathing fixture central bathing area without requiring entry into the general corridor.*

1225.4.1.7 Patient/nurse call system. *A patient/nurse call system complying with Section 517.123, California Electrical Code, shall be provided.*

1225.4.1.7.1 *In small house skilled nursing facilities, visitor toilet room(s) shall be equipped with a nurse call station.*

1225.4.1.8 Special-purpose rooms. *Special-purpose rooms for the purpose of single-patient occupancy shall be provided at a ratio of one room for every 35 patients or fraction thereof. Airborne infection isolation rooms may be included in determining the number of special-purpose rooms required for the facilities.*

Exception: *The special-purpose room may be omitted if all patient rooms are single-resident rooms.*

1225.4.1.9 Airborne infection isolation rooms. *If provided, the airborne infection isolation room shall comply with all of the requirements of Section 1224.14.3.*

1225.4.1.10 Protective environment room(s). *If provided, the protective environment room shall comply with all of the requirements of Section 1224.14.4.*

1225.4.1.11 Quiet room. *If a quiet room is provided, the quiet room shall comply with the following requirements.*

1225.4.1.11.1 Space requirements. *Refer to Section 1225.5.1.2, Nursing service space.*

1225.4.1.11.2 Toilet room. *Provide a patient toilet room adjacent to the quiet room. The patient toilet room shall not be shared with another patient room. If the quiet room is located in a common area, the patient toilet room may be shared with compatible services or activities.*

1225.4.1.11.3 Noise control. *The quiet room shall comply with the acoustic requirements of Section 1224.4.19, Noise control.*

1225.4.2 DIETETIC SERVICE SPACE.

1225.4.2.1 General. *Food service facilities and equipment shall conform with these standards, the standards of the National Sanitation Foundation and the requirements of the local public health agency.*

1225.4.2.1.1 Distribution. *Provision(s) shall be made for transport of hot and cold foods as required, appropriate for the type of food service selected.*

1225.4.2.1.2 Dining space. *Separate dining spaces shall be provided for patients and staff. These spaces shall be separate from the food preparation and distribution areas.*

Exception: *Shared dining shall be provided for patients and staff in small house skilled nursing facilities.*

1225.4.2.1.3 Location. *The design and location of dining facilities shall encourage patient use.*

1225.4.2.1.4 Food service. *Facilities shall be furnished to provide nourishment and snacks between scheduled meal service.*

1225.4.2.2 Functional elements. *The following facilities, in the size and number appropriate for the type of food service selected, shall be provided:*

1225.4.2.2.1 Location. *Food-service areas shall be directly accessible to the entry for food supply deliveries and for the removal of kitchen wastes.*

1225.4.2.2.2 Receiving/control stations. *A control station shall be provided for the receiving and control of incoming dietary supplies.*

1225.4.2.2.3 Food preparation facilities. *Food preparation facilities shall be provided to accommodate the method of food preparation required.*

1. *Conventional food preparation systems require space and equipment for preparing, cooking and baking.*
2. *Convenience food service systems using frozen prepared meals, bulk packaged entrees, individual packaged portions or those using contractual commissary services require space and equipment for thawing, portioning, cooking and baking.*

1225.4.2.2.4 Handwashing stations. *Handwashing stations shall be located in the food preparation area.*

1225.4.2.2.5 Ice-making facilities. *Ice-making facilities may be located in the food preparation area or in a separate room. They shall be easily cleanable and immediately accessible to the dietary function.*

1225.4.2.2.6 Assembly and distribution. *A patient tray assembly area shall be provided and shall be immediately accessible to the food preparation and distribution areas.*

1. *If food service carts are utilized, a cart distribution system shall accommodate spaces for storage, loading, distribution, receiving and sanitizing of the food service carts. Cart circulation shall not be through food preparation areas.*

1225.4.2.2.7 Ware-washing facilities. *Ware-washing space shall be provided in a room separate from the food preparation and serving area. It shall be designed to prevent contamination of clean wares with soiled wares through cross-traffic. The clean wares shall be transferred for storage or use in the dining area without having to pass through food preparation areas.*

1. *Commercial-type ware-washing equipment shall be provided.*
2. *Space shall be provided for receiving, scraping, sorting and stacking soiled tableware and for transferring clean tableware to the using areas.*
3. *Handwashing stations shall be provided in the ware-washing space.*

1225.4.2.2.8 Pot-washing facilities. *Pot-washing facilities shall include multi-compartmented sinks.*

1225.4.2.2.9 Office space. *Office or other space shall be provided for the dietician or dietetic service supervisor.*

1225.4.2.2.10 Storage.

1. *Food storage space, including cold storage, shall be provided for a supply of food of at least a 7 day staple, 2 day frozen, 2 day perishable, and an emergency food and water supply. All food shall be stored clear of the floor. The lowest shelf shall be not less than 12 inches (305 mm) above the floor or shall be closed in and sealed tight, for ease of cleaning.*

   As a minimum, dietary storage space shall be provided in accordance with the following schedule:

Licensed Bed Capacity	***Storage Space***
1 to 99 beds	*2 square feet (0.19 m^2) per bed*
100 to 199 beds	*200 square feet (18.58 m^2) plus 1 square foot 0.0929 m^2) per bed in excess of 100 beds*
200 beds and over	*300 square feet (27.99 m^2), plus $^1/_2$ square foot (0.0465 m^2) per bed in excess of 200 beds*

Space to allow refrigeration for the storage of frozen and chilled foods shall be provided at a minimum of 2 cubic feet (0.057 m^3) of usable space per bed.

2. *Additional storage space for dietetic service supplies, such as paper products, equipment, tray delivery carts, etc. shall be provided.*
3. *Storage areas and sanitizing facilities for cans, carts and mobile-tray conveyors shall be provided.*
4. *Waste, storage and recycling facilities (per local requirements) shall be located in a separate room easily accessible to the outside for direct pickup or disposal.*

1225.4.2.2.11 Toilet rooms. *Toilet rooms shall be provided for the exclusive use of the dietary staff. They shall not open directly into the food preparation areas, but shall be readily accessible.*

Exception: *Small house skilled nursing facilities utilizing staff trained for dietary and care-giving responsibilities may provide toilet room(s) serving both the dietary and nursing service areas.*

1225.4.2.2.12 Lockers. *An enclosed, separate area shall be provided for dietetic service employees' clothing and personal belongings.*

Exception: *Small house skilled nursing facilities utilizing staff trained for dietary and care-giving responsibilities may provide common locker room(s) serving both the dietary and nursing service areas.*

1225.4.2.2.13 Housekeeping room. *A housekeeping room meeting the requirements of Section 1224.4.15 shall be located within the dietary department for the exclusive use of the dietary department.*

1225.4.2.3 Outside service. *On approval of the Licensing Agency, when food is provided by an outside food service, the facility shall maintain adequate space, equipment and food supplies to accommodate required functional elements listed in Section 1225.4.2.2, as required to provide patient food service in the event that the outside food service is interrupted.*

SUPPORT SERVICES.

1225.4.3 ADMINISTRATION SPACE.

1225.4.3.1 Administration and public spaces. *An administration area shall be provided which shall include space for business, administration, admitting, public toilet room(s), lobby and public telephone.*

1225.4.3.2 Medical record storage. *Space shall be provided for the storage of medical records.*

1225.4.3.3 Office. *An office for the director of nurses shall be provided.*

1225.4.3.4 Small house skilled nursing facilities. *Small house skilled nursing facility units may provide the administration and public spaces, medical record storage and the nursing director's office in a separate centralized support area attached to the unit(s) or detached in a separate building in close proximity to the unit(s), as a part of the small house skilled nursing facility. This building shall be under OSHPD jurisdiction.*

1225.4.4 STERILE SUPPLIES.

1225.4.4.1 Storage. *Each facility shall provide space for the storage of disposable sterile supplies or provide space for sterilization and disinfection equipment.*

Exception: *Facilities with contractual arrangements for outside autoclaving and sterilizing services.*

1225.4.4.2 Central sterile supply. *If provided, shall accommodate the following:*

1225.4.4.2.1 Minimum requirements. *A central supply and sterilizing area shall be provided. Rooms and spaces shall accommodate the following services and equipment:*

1. *Soiled work area. A receiving and gross cleaning area which shall contain work space and equipment for cleaning medical and surgical equipment and for disposal of or processing of soiled material.*
2. *Clean work area. A clean work area which shall contain work space and equipment for sterilizing medical and surgical equipment and supplies.*
3. *Sterilizing space.*
4. *Storage. Space for sterile supplies and unsterile supplies.*

1225.4.4.2.2 Sterilizers. *All sterilizers and autoclaves which emit steam exhaust shall be vented to the outside of the building. Such vents shall be independent from the plumbing vent system.*

Exception: *Small instrument sterilizers.*

1225.4.5 STORAGE.

1225.4.5.1 Required areas. *Facilities shall provide combined general and specialized storage in accordance with the following schedule:*

Licensed Bed Capacity	***Storage Area***
1 to 10 beds	*120 square feet (11.15 m^2) minimum*
11 to 100 beds	*12 square feet (1.11 m^2) per bed*
Over 100 beds	*1,200 square feet (111.48 m^2) plus 5 square feet (0.46 m^2) per bed for each bed over 100*

1225.4.5.2 Specialized storage. *Shall include those spaces identified in the dietetic food storage of Section 1225.4.2.2.10 and as follows:*

1225.4.5.2.1 Linen. *Separate and enclosed facilities for clean and soiled linen in each nursing unit. The clean linen storage space shall have a minimum area of 10 square feet (0.93 m^2) and may be within the clean utility room. The soiled linen collection space shall have an area of no less than 10 square feet (0.93 m^2), except where linen chutes are provided, and may be within the soiled utility room.*

1225.4.5.2.2 Supply. *One supply storage space having a minimum area of 15 square feet (1.39 m^2) shall be provided in each nursing unit. Supply storage may be within the clean utility room used only as part of a system for distributing clean and sterile supplies.*

1225.4.5.2.3 Wheelchairs. *A room or space shall be provided in each nursing unit for wheelchairs and stretchers. The wheelchair and stretcher space shall have a minimum area of 15 square feet (1.39 m^2).*

1225.4.5.2.4 Separate supplies. *Sterile and unsterile supplies shall be stored separately.*

1225.4.5.2.5 Location. *All storage spaces shall be readily accessible in the licensed facility.*

1225.4.6 HOUSEKEEPING ROOMS. *Housekeeping rooms shall be provided to serve each department and nursing unit, and may be shared by compatible departments, except when specifically required by other sections.*

1225.4.7 LAUNDRY. *If a laundry is to be provided, the following is required in addition to the laundry room:*

1. *A separate soiled linen receiving, holding and sorting room with handwashing station.*
2. *A separate clean linen storage, issuing and holding room.*
3. *Storage for laundry supplies.*

1225.4.7.1 Outside service. *If linen is processed off site, the following shall be provided within the facility:*

1. *A soiled linen holding room.*
2. *A separate clean linen receiving and storage room.*

1225.4.8 EMPLOYEE DRESSING ROOMS AND LOCKERS. *Separate dressing rooms with toilet(s), lavatories and lockers for male and female personnel shall be provided.*

Exception: *Small house skilled nursing facilities, with a peak shift of less than five staff, may provide a single toilet room serving both male and female personnel in compliance with the California Plumbing Code Table 4-3, footnote 7.*

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1225.5 SKILLED NURSING UNIT MODELS. *The requirements of the Medical Model or the Household Model shall apply to the Nursing Unit(s) in its entirety.*

1225.5.1 MEDICAL MODEL.

1225.5.1.1 General construction. *Skilled nursing and intermediate-care facilities shall comply with Sections 1224.4 through 1224.13 whenever applicable.*

1225.5.1.2 NURSING SERVICE SPACE.

1225.5.1.2.1 Patient bedrooms. *Patients shall be accommodated only in rooms with the following minimum floor area, exclusive of toilet rooms, wardrobes, entrance vestibules and fixed furnishings or equipment.*

1. *Single-patient rooms: 110 square feet (10.21 m^2).*
2. *Multi-patient rooms: 80 square feet (7.43 m^2) per bed.*

1225.5.1.2.2 Bed clearance. *The dimensions and arrangement shall be such that there is a minimum distance of 3 feet (914 mm) between the sides and foot of the beds and any wall or any other fixed obstruction. In multiple-bed rooms, in addition to the above, a minimum clearance of 3 feet (914 mm) shall be provided between beds and a clearance of 4 feet (1219 mm) shall be available at the foot of each bed to permit the passage of equipment and beds.*

1225.5.1.2.3 Patient room beds. *Patient rooms shall be of such shape and dimensions to allow for the performance of routine functions, including the easy transfer of patients to and from bed to wheelchair or wheeled stretcher. Patient rooms shall provide direct access to a toilet room without entering or passing through a patient bed area. Maximum occupancy shall be two patients per patient room.*

Exception: *Where renovation of existing individual patient rooms is undertaken in facilities built under the 2013, or prior, California Building Code, maximum room capacity shall be no more than the present capacity, to a maximum of four patients per patient room. Placement of beds shall not be more than three deep from the exterior window. This exception is not permitted for patient rooms providing subacute care.*

1225.5.1.2.4 Outside exposure. *Each patient bed area shall have an outside exposure and shall not be below ground level. The window or glazed opening shall provide an unobstructed view from the head of each patient bed to the outdoors and shall be accessible to approach using a wheelchair or other patient-operated mobility device.*

1225.5.1.2.5 Operation and sills. *Patient room windows shall have sills not more than 36 inches (914 mm) above the floor. If operable windows are provided that require the use of tools or keys for operation, the tools or keys shall be located at the nurses' station.*

1225.5.1.2.6 Patient storage. *Each patient room shall include a separate wardrobe, locker or closet spaces for storing clothing, toilet articles and other personal belongings for each patient.*

Exception: *Pediatric and psychiatric patient rooms.*

1225.5.1.2.7 Patient toilet room. *Each patient room shall have its own patient toilet room. Each patient shall have direct access to a toilet room without entering a general corridor or patient bed area in a shared patient room.*

1225.5.1.3 PHARMACEUTICAL SERVICE SPACE.

1225.5.1.3.1 Drug space and storage. *Adequate space shall be provided at each nursing station for the storage of drugs and preparation of medication doses.*

1225.5.1.3.2 Drug access. *All spaces and areas used for the storage of drugs shall be lockable and accessible to authorized personnel only.*

1225.5.1.3.3 Narcotics. *Specific space shall be designed for safe storage of narcotics and other dangerous drugs.*

1225.5.1.3.4 Drug refrigeration. *Facilities shall provide for storage of drugs requiring refrigeration.*

1225.5.1.3.5 Pharmacy. *The pharmacy shall not serve the general public unless a separate public entrance or a separate public serving window is utilized.*

1225.5.1.4 ACTIVITY PROGRAMMING SPACE. *Designated activity areas appropriate to independent and group needs of patients shall be provided as follows:*

1225.5.1.4.1 Skilled nursing facilities.

1. *Recreation room. Each floor of each building accommodating six or more patients shall be provided with a recreation room with a minimum of 100 square feet (9.29 m^2).*
2. *Recreation and dining. A minimum of 100 square feet (9.29 m^2) plus 12 square feet (1.11 m^2) per bed shall be provided for recreation and dining activities.*

1225.5.1.4.2 Intermediate-care facilities.

1. *Recreation room. Each floor of each building accommodating five or more patients shall be provided with a recreation room with a minimum of 150 square feet (13.94 m^2).*
2. *Recreation and dining. A minimum of 30 square feet (2.79 m^2) per bed for recreation and dining activities.*
3. *Outdoor space for activities and recreation.*

1225.5.1.4.3 Equipment and supplies. *Recreation and dining spaces shall be provided with space to store equipment and supplies.*

1225.5.2 HOUSEHOLD MODEL.

1225.5.2.1 General construction. *Skilled nursing and intermediate-care facilities and small house skilled nursing facilities shall comply with Sections 1224.4 through 1224.13 whenever applicable, and the following sections:*

1225.5.2.1.1 Door thresholds. *Door thresholds, except where required at exterior doors and expansion joint covers, shall be designed to facilitate use of wheelchairs and carts and to prevent tripping, and shall provide a smooth and level transition from surface-to-surface.*

1225.5.2.1.2 Seating area. *A seating area(s) located out of the required egress width shall be provided along the access corridor that is used by patients.*

1225.5.2.1.3 Towel bars. *Towel bars shall be provided at each bathing facility.*

1225.5.2.1.4 Hardware. *All patient use plumbing fixtures and door operating hardware shall be equipped with lever type hardware for easy gripping and turning.*

1225.5.2.1.5 Drinking fountain. *A minimum of one drinking fountain shall be provided per resident floor, unless drinking water is available from the resident dietary area.*

1225.5.2.2 Cluster/household unit and resident unit.

1225.5.2.2.1 Design. *Each resident unit shall consist of the resident rooms, resident support areas and resident living areas. The unit shall be designed as a cluster/household resident unit or as a resident unit with double or single loaded access corridors. If the cluster/household unit design is utilized, it shall be designed around resident support and living areas with a maximum of 20 patients per cluster/household unit. If the double or single loaded corridor resident unit design is utilized, the access corridor shall be designed so that travel distance from the entrance of the resident unit to the furthest resident room door is no more than 60 feet (18.29 m) without a change of corridor direction or a node for a resident sitting area.*

Exception: *Small house skilled nursing facilities are limited to household units with a maximum of 12 patients per unit. Small house household units may also be developed as individual, free-standing facilities.*

1225.5.2.2.2 Arrangement. *Each resident unit shall be arranged to avoid unnecessary and unrelated travel through the unit.*

1225.5.2.2.3 Distinct parts or neighborhoods. *Both the cluster/household unit and resident unit designs may be grouped into distinct parts or neighborhoods to a maximum of 60 patients. These distinct parts or neighborhoods composed of the resident unit(s) as described in Section 1225.5.2.2.1 may share the functional requirements of the resident support areas as described in Sections 1225.5.2.4 and 1225.5.2.5 of this code.*

1225.5.2.3 Resident room.

1225.5.2.3.1 Capacity. *In new construction and additions, the maximum room capacity shall be two patients. Resident sleeping areas in all double resident room designs shall be visually separated from each other by a full height wall or a permanently installed sliding or folding door or partition, and shall provide each patient direct use of and direct access to an exterior window at all times. Walls, doors or partitions used to separate resident beds shall provide visual and acoustical separation. A door leading to each resident bed area in addition to the corridor door is not required. Other resident room arrangements where a permanent partition or door is not used to separate the resident sleeping areas may be utilized if adequate visual separation such as a cubicle curtain(s) and an exterior window for each individual resident sleeping area is provided. In this case individual thermostats for the resident bed areas shall not be required.*

Exception: *In small house skilled nursing facilities, resident sleeping areas in all double-resident room designs shall be visually separated from each other by a full-height wall or a permanently installed sliding or folding door or partition, and shall provide each patient direct use of and direct access to an exterior window at all times. Walls, doors or partitions used to separate resident beds shall provide visual and acoustical separation.*

1225.5.2.3.2 Renovation. *Where renovation work is undertaken of the resident room that alters the physical configuration of the resident room and the present capacity is more than two patients, the maximum room capacity shall be no more than two patients at the conclusion of the renovation.*

1225.5.2.3.3 Space requirements. *Rooms shall have a minimum of 100 square feet (9.29 m^2) of clear floor area per bed in double resident rooms and 120 square feet (11.15 m^2) of clear floor area in single resident rooms, exclusive of the space consumed by toilet rooms, closets, lockers, wardrobes, lavatories, alcoves and door swings into the room or entrance vestibules, whichever is greater. For the purpose of minimum clear floor area, the entrance vestibule is defined as that floor area located between the room entrance door and the room floor area containing the resident bed(s).*

1225.5.2.3.4 Arrangement. *Dimensions and arrangement of resident rooms shall be designed to accommodate at least two bed positions to provide patient choice of bed placement. All such bed positions shall be designed so that the bed will not obstruct access to the supporting utilities serving the bed, such as the nurse call station, and the required electrical outlets that provide service for that bed. Only one bed position design shall be required for a bed that is equipped with a piped medical gas headwall unit, unless special requirements such as providing care for bariatric patients does permit the design of two bed positions in the room.*

1225.5.2.3.5 Clearance. *A 3 feet (0.91 m) wide clear access to each bed shall be provided along at least 75 percent of the length of one side of the bed and shall be designed to allow access for the use of a wheelchair and other portable equipment. For beds equipped with a piped-in medical gas headwall unit, there shall be a minimum of 3 feet (0.91 m) between the sides and foot of*

the bed and any wall or any other fixed obstruction. For planning purposes, a full-size bed is assumed to be 3 feet 6 inches (1.07 m) wide by 8 feet (2.43 m) long.

1225.5.2.3.6 Renovations. *For renovations that alter the physical configuration of the resident room but have existing structural limitations that require two resident beds to be located in a shared resident sleeping area, there shall be a minimum of 3 feet (0.91 m) between the sides and foot of the bed and the adjacent bed. If one bed must be located to the side of the other bed, there shall be a clearance of 4 feet (1.22 m) to any fixed obstruction available at the foot of this bed to permit the passage of equipment and bed without moving the resident's bed located nearest to the room door.*

Exception: *In small house skilled nursing facilities, two beds shall not be permitted in a shared resident sleeping area.*

1225.5.2.3.7 Resident toilet or bath room. *Each patient shall have access to a toilet room without having to enter the general corridor area or the resident bed area in a shared resident room. One toilet room shall serve no more than two patients and no more than two resident rooms. The door to the toilet room shall be side hinged and either swing out from the toilet room or be equipped with emergency release hardware. Sliding doors equipped with sliding door hardware located on the resident room side of the wall and not equipped with a bottom door track shall be permitted. If a sliding door is used in a resident toilet or bath room, a D-shaped handle at least 4 inches (10.16 cm) long shall be provided to open the door. The sliding door shall permit access, and negate the need to push against a patient who may have collapsed within the toilet room. Unless otherwise required by this code, this door shall be at least 36 inches (914.4 mm) wide. A lavatory shall be provided in each resident toilet room.*

1225.5.2.3.8 Wardrobe closet. *Each resident room shall be provided with a wardrobe or closet for each patient. Each wardrobe or closet shall have minimum inside dimensions of 2 feet (0.61 m) in depth by 1 foot 8 inches (0.51 m) in width. Each shall be accessible to the patient at all times and shall have adjustable shelf(s) and an adjustable clothes rod that is adjustable in at most 4 inches (10.16 cm) increments from 4 feet (1.22 m) to 5 feet 8 inches (1.73 m) above finished floor or higher as closet size permits. When the wardrobe or closet is designed to meet the requirements for accessibility per Chapter 11B of this code, it shall include additional accessible storage area(s) for full-length garments. The shelf may be omitted if the clothing unit provides at least two drawers. Locked storage for personal items shall be provided within the resident sleeping room or area.*

1225.5.2.4 Resident support area.

1225.5.2.4.1 Features and arrangement. *Size and features of each resident support area will depend upon the number and type of patients served. The resident support area may be arranged and located to serve more than one resident unit, but at least one such support area shall be provided on each resident floor. The following resident support areas shall be located in or be readily accessible to each resident unit.*

1225.5.2.4.2 Staff work area. *A centralized staff work area shall be provided. It shall have space for supervisory administrative work activities, charting and storage. In each resident unit, the functions of administrative work, charting and storage may be located among several separate direct care staff work areas. In this case, a centralized staff work area is not required.*

1225.5.2.4.3 Clean utility. *A clean utility or clean holding room for storage and distribution of clean supply materials shall be provided. If the room is used for preparing patient care items, it shall contain a work counter, a handwashing station and storage facilities for clean and sterile supplies. If the room is used only for storage and holding as a part of a system for distribution of clean and sterile supply materials, the work counter and handwashing station requirements may be omitted. The minimum size of the room shall be 15 square feet (1.39 m^2) with 1 square foot (0.092 m^2) of additional space provided per patient for over 15 patients and may be allocated among several clean utility or clean holding rooms or closets.*

1225.5.2.4.4 Soiled utility. *A soiled utility or soiled holding room(s) shall be provided. The soiled utility function shall be comprised of a flushing rim clinical service sink or other appropriate flushing fixture, with bedpan rinsing device, soiled linen receptacles, waste receptacles, handwashing station and a work counter with a usable minimum work surface area of 6 square feet (0.56 m^2). The total minimum size of the room shall be 20 square feet (1.86 m^2) with 1.5 square feet (0.140 m^2) of additional space provided per patient for over 15 patients and may be allocated among several soiled utility or soiled holding rooms. Rooms used only for the holding of soiled materials need contain only a handwashing station.*

1225.5.2.4.5 Medicine preparation. *A medicine preparation room or a self-contained medicine dispensing unit shall be provided for the provision of medication distribution. The self-contained medicine dispensing unit shall be under the visual control of the staff. If a medicine preparation room is utilized, it shall be equipped with a lockable door, have a minimum area of 50 square feet (4.65 m^2) and shall contain a refrigerator, locked storage for controlled drugs, a handwashing station and a work counter with a minimum of 6 square feet (0.56 m^2) of work surface. If a self-contained medicine dispensing unit is utilized, it may be located at the nurse station, in the clean utility room, in an alcove, or in other spaces convenient for staff control provided the area occupied by the unit does not encroach upon required minimum areas. The dispensing unit may be used in a medicine preparation room as locked storage for controlled drugs within the minimum area of 50 square feet (4.65 m^2), however, the standard "cup sinks" provided in many self-contained units shall not be a substitute for the required handwashing station. If there is no linen storage in the clean utility room, medicine preparation may be part of the clean utility room in which case an additional 20 square feet (1.8 m^2) dedicated for this purpose shall be required. A refrigerator shall also be required if medicine preparation is included in this room. Non-controlled prescription drugs may be stored inside the resident's sleeping room or toilet room if they are secured inside of an automatic closing and automatic locking dispensing unit that is secured in place.*

1225.5.2.4.5.1. *In small house skilled nursing facilities, if self-contained medicine dispensing units are provided, they shall be located in either a medication preparation room or a clean utility room.*

1225.5.2.4.6 Equipment storage. *An equipment storage room(s) shall be provided for storage of resident unit equipment. The minimum area required shall be equal to 2 square feet (0.19 m^2) for each patient with no room being less than 20 square feet (1.86 m^2) in area.*

1225.5.2.4.7 Housekeeping room. *A housekeeping room(s) shall be provided for storage and use of housekeeping supplies and equipment.*

1225.5.2.4.8 Clean linen room. *A clean linen storage room, closet or area shall be provided. This area may be located within the clean utility or clean holding room and shall be large enough to accommodate the storage of linen carts.*

1225.5.2.4.9 Nourishment room. *A nourishment room or area for serving nourishments between meals shall be provided and shall contain a work counter, refrigerator, storage cabinets and sink. Ice for patients' consumption shall be provided by an icemaker unit that may serve more than one nourishment station if the nourishment stations are in close proximity to each other. Where the icemaker unit is accessible to patients or the public, it shall be a self-dispensing type. The nourishment room shall include space for trays and dishes used for nonscheduled meal service. A handwashing station shall be in or immediately accessible from the nourishment room.*

1225.5.2.4.9.1 *In small house skilled nursing facilities, the nourishment area may be provided as part of the resident dietary area required under Section 1225.5.2.5.4.*

1225.5.2.4.10 Storage alcove. *A storage alcove space for a wheelchair(s) shall be provided in an area located out of the required means of exit access.*

1225.5.2.4.11 Resident bathing facilities. *Resident bathing facilities shall be provided with a minimum of one bathtub or one hydro tub per resident unit, or one shower for every 20 patients and for each major fraction thereof not otherwise served by bathing facilities in resident rooms. When centralized bathing is provided, patients shall have access to at least one bathing room per floor or unit sized to permit assisted bathing in a tub or shower in that resident unit. The bathtub in this room shall be accessible to patients in wheelchairs and the shower shall accommodate a shower chair. Other tubs or showers shall be in individual rooms or curtained enclosures with space for private use of the bathing fixture, for drying and dressing, and access to a grooming location containing a sink, mirror and counter or shelf. A separate private toilet shall be provided that is directly accessible to each multi-bathing fixture central bathing area without requiring entry into the general corridor. This toilet may also serve as a toilet training facility. This centralized bathing area shall comply with Chapter 11B of this code.*

1225.5.2.4.12 Private bathing. *All showers located in bathrooms connected directly to the resident room shall be designed so that a shower chair can be easily rolled over the threshold. Resident rooms and associated toilet rooms, required to be accessible, shall comply with Chapter 11B of this code.*

1225.5.2.5 Resident living area.

1225.5.2.5.1 Dining. *Dining, lounges, and recreation and social areas for patients shall be provided in each resident unit. The total area of these spaces shall be a minimum of 35 square feet (3.25 m^2) per patient with a minimum total area of 225 square feet (20.90 m^2). At least 20 square feet (1.86 m^2) per patient shall be available for dining. Storage for supplies and equipment shall be provided in the recreation area.*

1225.5.2.5.2 Outdoor area. *Outdoor area(s) shall be provided for the use of all patients and shall include walking paths of durable materials, benches, shaded areas and visual focusing element(s) such as landscaping, sculpture(s) or fountain(s). Security fencing if used shall be of a residential design and provide some visual connection to the exterior of the secured area. If an exterior visual connection is not possible or desirable, then the interior of the outside area shall be landscaped to be visually interesting.*

1225.5.2.5.3 Storage. *Storage for supplies, patient needs and recreation shall be provided. The minimum required area shall be 5 square feet (0.46 m^2) per bed up to 600 square feet (55.74 m^2).*

1225.5.2.5.4 Dietary area. *A resident dietary area shall be provided in the resident unit for the use of staff, patients and family. The resident dietary area may include cooking equipment, countertops, kitchen sink and storage areas. This dietary area is in addition to the dietetic service space requirements in Section 1225.4.2.*

1225.5.2.5.4.1 *Food preparation spaces in the resident dietary area in a small house skilled nursing facility shall be designed to accommodate the method of food preparation required. The California Department of Public Health, Licensing and Certification shall review proposed food services spaces at a preliminary stage of plan review.*

1225.5.2.5.4.2 *The resident dietary area in a small house skilled nursing facility shall provide a handwashing station. This handwashing station shall be in addition to the kitchen sink and shall be located in or immediately accessible to the resident kitchen facilities.*

1225.5.2.5.4.3 *When provided, the resident dietary area in a small house skilled nursing facility shall have a commercial ware-washing space meeting the requirements for the care model used. This space shall be designed to prevent cross contamination by providing area for receiving, scraping, sorting and stacking soiled tableware and for transferring clean tableware to point-of-use areas.*

1225.5.2.5.4.4 *The resident dietary area in a small house skilled nursing facility shall provide access to self-dispensing drinking water and self-dispensing ice.*

- *(a) Ice-making equipment shall be accessible to residents and visitors*
- *(b) Ice-making equipment shall be located, designed and installed to minimize noise.*
- *(c) Ice-making equipment shall be permitted to serve more than one food area within resident kitchen facilities.*

1225.5.2.5.5 Therapy unit. *If provided, physical, speech and occupational therapy units shall comply with Sections 1225.6.2 through 1225.6.4.*

1225.5.2.5.6 Barber/beauty room. *If provided, the barber/beauty room shall be a minimum of 120 square feet (11.15 m^2) with the least dimension of 10 feet (3.05 m).*

1225.5.2.5.7 Resident laundry facilities. *If provided, resident laundry facilities including washing and drying equipment may be provided for staff, family or individual patient use for the laundering of patient's personal items. If provided they shall be readily accessible from each resident unit without requiring the user to enter another resident unit or floor, and may be shared between two resident units. These resident laundry facilities may utilize residential laundry equipment. Each resident laundry area shall contain a handwashing fixture.*

1225.5.2.6 STAFF SUPPORT AREA.

1225.5.2.6.1 Staff lounge. *Staff lounge area(s) shall be provided. It may be shared by multiple resident units if the lounge is located so it is accessible without requiring the user to enter into or through any other resident unit.*

1225.5.2.6.2 Storage. *Lockable closets, drawers or compartments shall be provided on the resident unit for staff and may be located in the lounge for safekeeping of staff's personal effects.*

1225.5.2.6.3 Staff toilet rooms. *Staff toilet rooms shall be readily accessible to each resident unit.*

1225.5.2.6.4 Multipurpose room. *At least one multipurpose room per skilled nursing facility shall be provided for conferences, meetings and health education purposes, and shall accommodate the use of visual aids. This room shall have a minimum area of 120 square feet (11.15 m^2).*

1225.5.2.6.5 Conference room. *Conference or consultation room for patient and family use shall be provided and may be shared by more than two resident units if it is centrally located to each.*

1225.6 OPTIONAL SERVICES.

1225.6.1 General. *Waiting areas and access to optional services for outpatients shall accommodate the following:*

1225.6.1.1 Outpatient waiting rooms. *Waiting rooms for outpatients shall provide a seating area and space for wheelchairs, and have public corridor access to or provisions for, public toilet room(s), drinking fountain and telephone.*

Note: *One waiting area may serve more than one department or service.*

1225.6.1.2 Circulation. *If x-ray examinations are to be performed on outpatients, outpatient access to the radiological spaces shall not traverse a nursing unit.*

Exception: *Satellite radiology, laboratory, pharmacy, and physical and occupational therapy space serving inpatients may be located in nursing units and inpatient treatment areas.*

1225.6.2 PHYSICAL THERAPY SERVICE. *Refer to Section 1224.35.2.*

1225.6.3 OCCUPATIONAL THERAPY SERVICE. *Refer to Section 1224.35.3.*

1225.6.4 SPEECH PATHOLOGY AND/OR AUDIOLOGY SERVICE. *At least one space free of ambient noise shall be provided. A handwashing station shall be provided.*

1225.6.5 SOCIAL WORK SERVICE. *Office space for privacy in interviewing, telephoning and conferences shall be provided.*

1225.6.6 SPECIAL TREATMENT PROGRAM SERVICE. *Refer to California Administrative Code (Part 1 of Title 24), Section 7-119, Functional Program, for requirements. Projects associated with Special Treatment Program Services in skilled nursing and intermediate-care facilities shall include a Patient Safety Risk Assessment. The skilled nursing facility shall have a minimum of 30 beds and shall meet the requirements of Chapter 3, Division 5, Title 22, California Code of Regulations.*

1225.6.6.1 Location. *A special treatment program service providing therapeutic services to an identified mentally disordered population group shall be located in a distinct separate unit of the facility.*

1225.6.6.2 Nursing service. *The nursing service space shall comply with Section 1225.4.1.*

1225.6.6.3 Activity program. *The activity program space shall provide a minimum of 25 square feet (2.3 m^2) of dining and recreation space per bed.*

1225.6.6.4 Indoor and outdoor space. *Shall be designated for the special treatment program.*

SECTION 1226 [OSHPD 3]-CLINICS

1226.1 Scope. *The provisions of this section shall apply to primary care clinics, specialty clinics and psychology clinics, licensed by the California Department of Public Health. Primary care clinics include free clinics, community clinics, employee clinics and optometric clinics. Specialty clinics include surgical clinics, chronic dialysis clinics, rehabilitation clinics and alternative birth centers (ABC). This section shall also apply to outpatient clinical services of a hospital when provided in a freestanding building.*

1226.2 Application. *All new buildings and additions, alterations or repairs to existing buildings and conversion of space to a clinic use within existing buildings, subject to licensure by Licensing and Certification, California Department of Public Health, shall comply with applicable provisions of the California Electrical Code, California Mechanical Code, California Plumbing Code, California Fire Code, (Parts 3, 4, 5 and 9 of Title 24) and this section. OSHPD requirements apply to all facilities described above and are not dependent upon Occupancy Group designations.*

Exception: *See Section 1224.2.*

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1226.2.1 Outpatient clinical services. *Hospitals providing outpatient clinical services and clinics licensed under Health and Safety Code Section 1200 providing services that are not covered by this section shall meet the applicable requirements in Section 1224.*

1226.2.2 Special services. *A general acute care hospital referenced in Health and Safety Code Section 1255 (d) (3) (E), that provides special services in conformance with Health and Safety Code Section 1255, shall meet all the provisions of Section 1224.28.3 in addition to Section 1226.2. The Office of Statewide Hospital Planning and Development (OSHPD) shall review any proposed construction or alteration for OSHPD compliance.*

1226.3 Definitions. *Refer to Section 1224.3.*

1226.4 General construction. *Clinics and outpatient clinical services under a hospital license shall comply with the provisions under Section 1224.4, General Construction, where applicable, except as supplemented, amended or modified below.*

1226.4.1 Examination and treatment areas.

1226.4.1.1 Service spaces. *Refer to Section 1224.4.2.*

1226.4.1.2 Treatment spaces. *Refer to Section 1224.4.3.*

1226.4.1.3 Examination or treatment room. *Refer to Section 1224.4.4.1.*

1226.4.1.4 Airborne infection isolation exam/treatment room. *Refer to Section 1224.4.4.1.3.*

1226.4.2 Miscellaneous requirements.

1226.4.2.1 Station outlets. *When provided, refer to Section 1224.4.6.1.*

1226.4.2.2 Gas and vacuum systems. *When provided refer to Section 1224.4.6.2.*

1226.4.2.3 Hyperbaric facilities. *When provided, refer to Section 1224.4.6.3.*

1226.4.2.4 Laboratories. *Refer to Section 1224.4.6.4.*

1226.4.2.5 Nurse call systems. *Refer to Section 1224.4.6.5.*

1226.4.2.6 Noise reduction. *The noise reduction criteria shown in Table 1224.4.19 shall apply to partitions, floors and ceiling construction in patient treatment areas.*

1226.4.3 Corridors.

1226.4.3.1 Outpatient services. *Refer to Section 1224.4.7.3*

1226.4.3.2 Corridor width. *For clinics with bed/gurney patient(s) refer to Section 1224.4.7.1.*

1226.4.3.3 Light traffic. *Refer Section 1224.4.7.2.*

1226.4.3.4 Handrails. *For rehabilitation services space, refer to Section 1224.4.7.4.*

1226.4.3.5 Contiguous functions. *Basic services of a single licensed clinic may be located in separate suites. Each clinic suite shall be contiguous and include internal circulation to access each of the required functions identified for that specific basic service.*

Exceptions:

1. *Various functions including but not limited to reception, waiting, staff support areas such as toilets, storage and lounge may be located outside of the clinic suite with approval from the California Department of Public Health.*
2. *If toilets and drinking fountain(s) serving the public are provided as part of the overall building features, they need not be provided within the clinic suite.*
3. *Shared services. Space for general storage, laundry, housekeeping and waste management may be shared with other tenants.*

1226.4.4 Doors and door openings.

1226.4.4.1 Toilet room doors. *Refer to Section 1224.4.8.1.*

1226.4.4.2 Pocket doors. *Refer to Section 1224.4.8.2.*

1226.4.5 Windows.

1226.4.5.1 Window screens. *Refer to Section 1224.4.9.4.*

1226.4.5.2 Light and ventilation. *Refer to Section 1224.4.9.5.*

1226.4.6 Ceiling heights.

1226.4.6.1 Minimum height*. For minimum ceiling height requirements, refer to Section 1224.4.10.1.*

1226.4.6.2 Minimum height with fixed ceiling equipment. *Refer to Section 1224.4.10.2.*

1226.4.7 Interior finishes.

1226.4.7.1 Floor finishes. *Refer to Section 1224.4.11.1 and Table 1224.4.11.*

1226.4.7.1.1 Coved base. *Refer to Section 1224.4.11.1.1.*

1226.4.7.1.2 Wet cleaning. *Refer to Section 1224.4.11.1.3.*

1226.4.7.1.3 Airborne infection isolation exam/treatment room. *Refer to Section 1224.11.1.4.*

1226.4.7.2 Wall bases.

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1226.4.7.2.1 Material. *Refer to Section 1224.4.11.2.1.*

1226.4.7.2.2 Wet cleaning. *Refer to Section 1224.4.11.2.2.*

1226.4.7.3 Wall finishes. *Refer to Section 1224.4.11.3.*

1226.4.7.4 Ceilings. *Ceiling finishes shall comply with Section 1224.4.11.4 and Table 1224.4.11.*

1226.4.8 Elevators.

1226.4.8.1 Elevator cab requirements. *Buildings over one story in height with accommodations or services for patients on floors without grade-level entrance shall provide at least one elevator in compliance with Section 3002.4.*

1226.4.8.2 Dimensions. *Elevators used for the routine transport of wheeled stretchers shall have minimum inside platform dimensions of 5 feet by 8 feet (1524 mm by 2438 mm) and a minimum clear door opening of 3 feet 8 inches (1118 mm).*

1226.4.9 Garbage, solid waste, medical waste and trash storage. *These facilities shall comply with the appropriate local health and environmental authorities' requirements, California Department of Public Health requirements for medical waste management, and comply with the following minimum requirements:*

1226.4.9.1 Location. *A location shall be provided for waste collection and storage with sufficient space based upon the volume of projected waste and length of anticipated storage. The location of compactors, balers, sharps containers and recycling container staging at docks or other waste removal areas shall comply with Section 1224.4.2.*

1226.4.9.2 Enclosure. *A lockable room or screened enclosure of at least 25 square feet (2.32 m^2) shall be provided for the washing and cleaning of garbage containers and for the storage of garbage, trash and other solid wastes.*

Exception: *This amount of space may not be required by the enforcing agency if there is a proposed method of handling and storage which requires a lesser amount of space. Additional space may be required by the enforcing agency when special operations or collection and disposal methods result in greater than usual accumulation of solid wastes.*

The room or screened enclosure shall include the following:

1. ***Floor and curb.*** *A concrete floor with a curb and with a drain connected to the sewer.*
2. ***Water.*** *Steam or hot water and cold water supplies in accordance with the California Plumbing Code.*
3. ***Size.*** *A minimum floor area of not less than 25 square feet (2.32 m^2), the least dimension of which shall be 4 feet (1219 mm). This amount of space may not be required by the enforcing agency if there is proposed a method of handling, storage or cleaning of containers which requires a lesser amount of space. Additional space may be required by the enforcing agency when special operations or collection and disposal methods result in greater than usual accumulation of solid wastes.*

1226.4.9.3 Waste holding room. *As an alternative to the requirements in Section 1226.4.9.2, a holding room for medical waste and garbage may be provided.*

Exception: *This amount of space may not be required by the enforcing agency if there is a proposed method of handling and storage which requires a lesser amount of space. Additional space may be required by the enforcing agency when special operations or collection and disposal methods result in greater than usual accumulation of solid wastes.*

The waste holding room shall comply with the following:

1. *The waste holding room shall be a minimum of 25 square feet, with the least dimension of which is 4 feet.*
2. *The waste holding room shall have 100 percent exhaust ventilation.*
3. *All finishes in the waste holding room shall comply with the requirements in Section 1224.4.11.*
4. *The waste holding room shall be immediately accessible to an exterior door.*

1226.4.10 Compactors. *Trash compactor systems shall meet the drainage and wash-down requirements under Section 1226.4.9.2, Items 1 and 2.*

Exception: *If a dumpster system is proposed, operational procedures for handling and storage must be specifically approved by the local health officials.*

1226.4.11 Housekeeping room. *Refer to Section 1224.4.15.*

1226.4.12 Laundry and trash chutes. *Gravity-type laundry and trash chutes shall comply with Section 1224.4.16.*

1226.4.13 Support areas for examination and treatment rooms.

1226.4.13.1 Nurse station(s). *If required, this area shall have space for counters and storage and shall have direct access to a handwashing stations (refer to Section 1224.3 for definition of handwashing station). It may be combined with or include centers for reception, charting and communication.*

1226.4.13.2 Medication station. *Provision shall be made for distribution of medications. This shall be done from a medicine preparation room or a self-contained medicine dispensing unit.*

1226.4.13.2.1 Medication preparation room or area. *When provided, the entry of the medication preparation room or area shall be under the visual control of the staff. This may be a part of the nurse station and shall include all of the following:*

1. *Work counter*
2. *Sink*
3. *Lockable refrigerator*

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4. *Immediate access to handwashing station*
5. *Locked storage for biologicals and drugs*

When a medication preparation room or area is to be used to store self-contained medication dispensing units, the room shall be designed with adequate space to prepare medications with the self-contained medication-dispensing units present.

1226.4.13.2.2 Self-contained medicine-dispensing unit. *When provided, the location of a self-contained medicine-dispensing unit shall be permitted in the clean workroom or at the administrative center or nurse station, provided there is adequate security for medications and adequate lighting to easily identify drugs. Immediate access to a handwashing station shall be provided.*

1226.4.13.3 Clean utility room. *A clean utility room shall be provided. If the room is used for preparing patient care items, it shall contain:*

1. *Work counter*
2. *Handwashing station*
3. *Storage facilities for clean and sterile supplies*

If the room is used only for storage and holding as part of a system for distribution of clean and sterile materials from a central sterile supply, the work counter and handwashing station may be omitted. Soiled and clean utility rooms or holding rooms shall be separated and have no direct connection.

1226.4.13.4 Soiled workroom or soiled holding room. *Soiled workroom or soiled holding room shall be provided and contain:*

1. *Clinic sink*

   Exception: *For primary care clinics, a utility sink or patient toilet room equipped with a bedpan flushing device may be provided in lieu of a clinic sink. A utility sink may be used for soaking or rinsing and shall be provided as appropriate to the method of decontamination used.*
2. *Handwashing station*
3. *Work counter*
4. *Storage cabinets*
5. *A designated area for waste receptacle(s)*
6. *A designated area for soiled linen receptacle(s)*

If the clinic includes a central sterile supply that complies with Section 1224.22 and the soiled holding room is used only for temporary holding of soiled materials, the clinic sink and work counter may be omitted. Where rooms are used for temporary holding of materials, provisions shall be made for separate collection, storage and disposal of soiled materials. Soiled and clean utility rooms or holding rooms shall be separated and have no direct connection.

1226.4.13.5 Sterile and pharmaceutical supply storage. *Separate storage for sterile supplies and pharmaceutical supplies shall be provided.*

1226.4.13.6 Sterilization facilities. *When provided, a sterilization facility shall meet the following applicable requirements:*

1226.4.13.6.1 Storage. *Each facility shall provide space for the storage of disposable sterile supplies or provide space for sterilization and disinfection equipment.*

Exception: *Facilities with contractual arrangements for outside autoclaving and sterilizing services.*

1226.4.13.6.2 Central sterile supply and sterilizing area. *When provided, rooms and spaces of the central supply and sterilizing area shall comply with the following:*

1. ***Soiled work area.*** *A receiving and gross cleaning area which shall contain work space and equipment for cleaning medical and surgical equipment and for disposal of or processing of soiled materials.*
2. ***Clean work area.*** *A clean work area which shall contain work space and equipment for sterilizing medical and surgical equipment and supplies.*
3. ***Sterilizing and equipment disinfection space.***
4. ***Storage.*** *Space for sterile supplies and unsterile supplies.*

1226.4.13.6.3 Sterilizers. *When provided, all sterilizers and autoclaves which emit system steam exhaust shall be vented to the outside of the building. Such vents shall be independent from the plumbing vent system.*

Exception: *Small instrument sterilizers.*

1226.4.13.7 Nourishment room. *When provided, the nourishment room or area shall have all of the following:*

1. *Sink*
2. *Work counter*
3. *Refrigerator*
4. *Storage cabinets*
5. *Equipment for serving nourishment*
6. *A handwashing station, as defined in Section 1224.3, shall be located in the nourishment room or be immediately accessible without going through a door.*

1226.4.14 Support areas for patients.

1226.4.14.1 Patient toilet room(s). *Toilet room(s) with a lavatory shall be provided separate from public use toilet(s) and shall be located to permit access from patient care areas without passing through publicly accessible areas.*

Exception: *For primary care clinics where the facility contains no more than three examination and/or treatment rooms, the patient toilet room shall be permitted to serve outpatient waiting room(s).*

1226.4.14.2 Specimen and/or blood collection facilities. *When provided, refer to Section 1224.4.4.3. Use of patient toilet room(s) shall be permitted for specimen collection.*

1226.4.15 General support services and facilities.

1226.4.15.1 Areas for off-site laundry services. *If linen is to be processed off site, the following shall be provided:*

1. *Soiled linen holding area or designated and dedicated area for soiled laundry cart.*
2. *Clean linen storage area that protects linen from soil or damage.*

1226.4.16 Public and administrative areas.

1226.4.16.1 Public.

1226.4.16.1.1 Reception. *A reception and information counter or desk shall be provided.*

1226.4.16.1.2 Outpatient waiting rooms. *Refer to Section 1224.4.5.*

1226.4.16.2 Administrative services.

1226.4.16.2.1 Medical records storage. *Outpatient clinics shall provide a health record service which shall comply with the following:*

1. *Work area for sorting and recording records for either paper or electronic media.*
2. *Storage area for records for either paper or electronic media.*

1226.4.16.2.2 Equipment and supply storage. *General storage facilities for office supplies and equipment shall be provided.*

1226.4.17 Support areas for staff.

1226.4.17.1 Staff toilet(s). *Provide staff toilet(s) in addition to and separate from, public and patient facilities. The areas shall contain toilet(s) and handwashing stations pursuant to the California Plumbing Code, Table 4-2.*

1226.4.17.2 Storage for employees. *Provide storage for staff personal effects with locking drawers or cabinets (may be individual desks or cabinets). Such storage shall be readily accessible to individual workstations and shall be staff controlled.*

1226.4.17.3 Staff lounge. *When provided, the lounge shall have adequate space to accommodate staff.*

OUTPATIENT CLINICAL SERVICES OF A HOSPITAL.

1226.5 OUTPATIENT CLINICAL SERVICES OF A HOSPITAL. *A licensed hospital may elect to locate certain outpatient services in a freestanding building. To be considered a freestanding building, refer to the California Administrative Code Section 7-111. See Section 309A.5.1 of the California Existing Building Code for eligibility for jurisdiction of the local enforcement agency over freestanding buildings adjacent to hospital buildings.*

Outpatient clinical services of a hospital provided in a freestanding building are regulated under the banner [OSHPD 3] instead of [OSHPD 1]. These services shall comply with Sections 1226.4.2 through 1226.4.8 and the provisions of this section. Outpatient clinical services of a hospital that are not addressed in the provisions of Section 1226 shall comply with applicable provisions of Section 1224 and/or Section 1228 as if those provisions were repeated in Section 1226.5.

GENERAL SUPPORT AREAS FOR OUTPATIENT CLINICAL SERVICES *- Requirements for all service types.*

1226.5.1 Support areas for patients.

1226.5.1.1 Patient toilet room(s). *Refer to Section 1226.4.14.1.*

1226.5.1.2 Specimen and/or blood collection facilities. *When provided, refer to Section 1224.4.4.2.*

1226.5.2 General support services and facilities.

1226.5.2.1 Garbage, solid waste, medical waste and trash storage. *Refer to Section 1226.4.9.*

1226.5.2.2 Housekeeping room. *Refer to Section 1224.4.15.*

1226.5.3 Public and administrative areas.

1226.5.3.1 Public area.

1226.5.3.1.1 Reception. *Refer to Section 1226.4.16.1.1.*

1226.5.3.1.2 Outpatient waiting room. *Refer to Section 1224.4.5.*

1226.5.3.1.3 Public toilet(s). *Refer to Section 1224.4.5.*

1226.5.3.1.4 Public telephone access. *Refer to Section 1224.4.5.*

1226.5.3.1.5 Drinking fountain(s). *Refer to Section 1224.4.5.*

1226.5.3.2 Administrative services.

1226.5.3.2.1 Medical records storage. *Refer to Section 1226.4.16.2.1.*

1226.5.3.2.2 Equipment and supply storage. *Refer to Section 1226.4.16.2.2.*

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1226.5.4 Support areas for staff.

1226.5.4.1 Staff toilet(s). *Refer to Section 1226.4.17.1.*

1226.5.4.2 Storage for employees. *Refer to Section 1226.4.17.2.*

RADIOLOGICAL/IMAGING SERVICE SPACE.

1226.5.5 Radiological/imaging service space. *When x-ray examination services, computerized tomography scanning, magnetic resonance imaging, ultrasound and/or mammography services are provided, the radiological/imaging services space shall comply with the provisions of this section.*

1226.5.5.1 Support spaces for radiological/imaging services. *The following spaces are common to the imaging service area and are minimum requirements:*

1226.5.5.1.1 Patient toilet room(s). *In service spaces with procedure rooms that do not require dedicated patient toilets, provide a minimum of one patient toilet room within the service space, refer to Section 1226.4.14.1.*

1226.5.5.1.2 Outpatient change area. *A separate space shall be provided where outpatients change from street clothing. This shall include provisions for clothing storage, space for clothing change and gowning area. Dressing rooms shall be readily accessible to the imaging rooms.*

1226.5.5.1.3 Staff facilities. *In service space of three or more procedure rooms, staff toilet room(s) internal to the service space.*

1226.5.5.1.4 Handwashing stations. *Handwashing stations shall be located within the unit.*

1226.5.5.1.5 Imaging storage (active). *If imaging storage systems are used, provide a means of sorting and filing patient film or electronic media for immediate retrieval shall be provided.*

1226.5.5.1.6 Medication station. *Provision shall be made for locked storage of medications and drugs. Refer to Section 1226.4.13.2.*

1226.5.5.1.7 Areas for off-site laundry services. *Refer to Section 1226.4.15.1.*

1226.5.5.2 Radiation protection. *Radiation protection requirements for equipment refer to Section 1224.18.1.1.*

1226.5.6 X-ray examination services*. When provided, x-ray examination services space shall comply with the following:*

1. *X-ray room.*
2. *When shielded control alcove with protective view windows is provided, refer to Section 1224.18.1.1.*
3. *Fluoroscopy room, when provided, shall have a toilet room directly accessible to the fluoroscopy room. This toilet room is in addition to common patient toilet room facilities located in the radiological/imaging service space.*
4. *Space for processing images.*
5. *An office or other suitable area for viewing and reporting radiographic examination.*

1226.5.7 Computerized tomography (CT) scanning. *When provided, CT services space shall comply with the requirements of Section 1224.18.3.*

1226.5.8 Magnetic resonance imaging (MRI). *When provided, MRI services space shall comply with the requirements of Section 1224.18.4.*

1226.5.9 Ultrasound. *When ultrasound is provided, refer to Section 1224.18.5.*

1226.5.10 Mammography. *When mammography is provided, refer to Section 1224.18.6.*

GASTROINTESTINAL ENDOSCOPY.

1226.5.11 Gastrointestinal endoscopy. *When provided, gastrointestinal endoscopy services space shall comply with Section 1224.39.3 and the provisions of this section:*

1226.5.11.1 Procedure Room(s).

1226.5.11.1.1 Space requirements. *Refer to Section 1224.39.3.1.1.*

1226.5.11.1.2 Handwashing station. *Refer to Section 1224.39.3.1.2.*

1226.5.11.2 Processing room. *Refer to Section 1224.39.3.2.*

1226.5.11.3 Preoperative patient holding. *Refer to Section 1224.16.2.*

1226.5.11.4 Post-anesthesia recovery area. *Refer to Section 1224.16.*

1226.5.11.5 Communication system. *Refer to Section 1224.39.3.5.*

1226.5.11.6 Support areas for outpatient gastrointestinal endoscopy.

1226.5.11.6.1 Control station. *Refer to Section 1224.15.3.1.*

1226.5.11.6.2 Medication station. *Refer to Section 1226.4.13.2.*

1226.5.11.6.3 Soiled workroom. *Refer to Section 1224.15.3.7.*

1226.5.11.6.4 Clean utility room. *Refer to Section 1224.15.3.8.*

1226.5.11.6.5 Anesthesia workroom. *Refer to Section 1224.15.3.9.*

1226.5.11.6.6 Storage room(s) for equipment and supplies used in gastrointestinal endoscopy service space. *Refer to Section 1224.15.3.10.*

1226.5.11.6.7 Staff clothing change areas. *Refer to Section 1224.15.3.11.*

1226.5.11.6.8 Housekeeping room. *Refer to Section* 1224.39.2.3.2.

1226.5.11.6.9 Sterile and pharmaceutical supply storage. *Refer to Section 1226.4.13.5.*

1226.5.11.7 Additional support areas for patients.

1226.5.11.7.1 Outpatient change area. *A separate space shall be provided where patients change out of their street clothing and are prepared for the procedure. This space shall include provisions for clothing storage, toilet room(s), sink, space for clothing change and gowning area.*

NUCLEAR MEDICINE.

1226.5.12 Nuclear medicine. *When provided, nuclear medicine services space shall comply with Section 1224.34 and the provisions of this section:*

1226.5.12.1 Radiation protection. *When provided, refer to Section 1224.34.1.1.*

1226.5.12.2 Nuclear medicine room. *Refer to Section 1224.34.1.2.*

1226.5.12.3 Radiopharmacy. *When provided, refer to Section 1224.34.1.3.*

1226.5.12.4 Support areas for nuclear medicine services.

1226.5.12.4.1 Cleanup. *Refer to Section 1224.34.2.2.*

1226.5.12.4.2 Dose administration area. *Refer to Section 1224.34.2.5.*

1226.5.12.4.3 Holding. *Refer to Section 1224.34.2.6.*

1226.5.12.4.4 Patient dressing rooms. *Refer to Section 1224.34.2.7.*

1226.5.12.4.5 Patient toilet room(s). *Refer to Section 1224.34.2.8.*

1226.5.12.4.6 Staff toilet room(s). *Refer to Section 1224.34.2.9.*

1226.5.12.4.7 Handwashing stations. *Refer to Section 1224.34.2.10.*

1226.5.12.4.8 Control desk and reception. *Refer to Section 1226.5.3.*

1226.5.12.4.9 Clean linen storage. *A storage area for clean linen shall be provided.*

1226.5.12.4.10 Soiled and contaminated material. *Refer to Section 1224.34.2.13.*

1226.5.12.5 Radiotherapy service space. *When provided, radiotherapy service space shall comply with the following provisions of this section:*

1226.5.12.5.1 Radiation protection. *Refer to Section 1224.34.3.2.*

1226.5.12.5.2 Room sizes. *Refer to Section 1224.34.3.3.*

1226.5.12.5.3 General support area. *Refer to Section 1224.34.3.4.*

1226.5.12.6 Additional support areas for linear accelerator.

1226.5.12.6.1 Mold room. *Refer to Section 1224.34.4.1.*

1226.5.12.6.2 Block room. *Refer to Section 1224.34.4.2.*

1226.5.12.7 Additional support areas for cobalt room.

1226.5.12.7.1 Hot lab.

1226.5.12.8 High dose rate brachytherapy room.

CANCER TREATMENT/INFUSION THERAPY.

1226.5.13 Cancer treatment/infusion therapy service space. *When provided, cancer treatment/infusion therapy service space shall comply with the provisions of this section:*

1226.5.13.1 Treatment area.

1226.5.13.1.1 Location. *Refer to Section 1224.39.4.2.1.*

1226.5.13.1.2 Nurse station(s). *Refer to Section 1224.39.4.2.2.*

1226.5.13.1.3 Individual patient treatment areas. *Refer to Section 1224.39.4.2.3.*

1226.5.13.1.4 Handwashing stations. *Refer to Section 1224.39.4.2.4.*

1226.5.13.1.5 Privacy. *Refer to Section 1224.39.4.2.5.*

1226.5.13.1.6 Medication dispensing. *Refer to Section 1224.39.4.2.6.*

1226.5.13.1.7 Examination room. *Refer to Section 1224.39.4.2.7.*

1226.5.13.1.8 Clean utility room. *Refer to Section 1224.39.4.2.8.*

1226.5.13.1.9 Soiled utility room. *Refer to Section 1224.39.4.2.9.*

1226.5.13.1.10 Nourishment station. *Refer to Section 1224.39.4.2.10.*

1226.5.13.1.11 Housekeeping room. *Refer to Section 1224.39.4.2.11.*

1226.5.13.1.12 Supplies. *Refer to Section 1224.39.4.2.12.*

1226.5.13.1.13 Storage. *Refer to Section 1224.39.4.2.13.*

1226.5.13.1.14 Clean linen storage. *Refer to Section 1224.39.4.2.14.*

1226.5.13.1.15 Patient storage. *Refer to Section 1224.39.4.3.2.*

HYPERBARIC THERAPY.

1226.5.14 Hyperbaric therapy service space. *When provided, hyperbaric therapy service space shall comply with Section 1224.39.5 and the provisions of this section:*

1226.5.14.1 General. *Refer to Section 1224.39.5.1.*

1226.5.14.2 Hyperbaric chambers. *Refer to Section 1224.39.5.2.*

1226.5.14.3 Pre-procedure patient holding area(s). *Refer to Section 1224.39.5.3.*

1226.5.14.4 Medical gas station outlets. *Refer to Section 1224.39.5.4.*

1226.5.14.5 Support areas for the hyperbaric suite.

1226.5.14.5.1 Reception/control desk. *Refer to Section 1224.39.5.5.1.*

1226.5.14.5.2 Examination/treatment room(s). *Refer to Section 1224.39.5.5.2.*

1226.5.14.5.3 Clean linen storage. *Refer to Section 1224.39.5.5.3.*

1226.5.14.5.4 Clean supply room. *Refer to Section 1224.39.5.5.4.*

1226.5.14.5.5 Gas cylinder room. *Refer to Section 1224.39.5.5.5*

1226.5.14.5.6 Gurney and wheelchair storage. *Refer to Section 1224.39.5.5.6.*

1226.5.14.5.7 Housekeeping room. *Refer to Section 1224.39.5.5.7.*

1226.5.14.5.8 Compressor room. *Refer to Section 1224.39.5.5.8.*

1226.5.14.6 Support areas for staff. *Refer to Section 1224.39.5.6.*

1226.5.14.7 Support areas for patients.

1226.5.14.7.1 Patient waiting area. *Refer to Section 1224.39.5.7.1.*

1226.5.14.7.2 Patient changing area. *Refer to Section 1224.39.5.7.2.*

1226.5.14.7.3 Patient toilet room. *Refer to Section 1224.39.5.7.3.*

PRIMARY CARE CLINICS.

1226.6 PRIMARY CARE CLINICS. *Primary care clinics and outpatient clinical services of a hospital providing services equivalent to a primary care clinic shall comply with Sections 1226.4.3 through 1226.4.8 and the provisions of this section.*

1226.6.1 Examination and treatment areas.

1226.6.1.1 Examination room(s). *Refer to Section 1224.4.4.1.*

1226.6.1.2 Treatment room(s). *Treatment room(s) for minor procedures (e.g., minor surgical procedures, casting), if provided, shall have a minimum area of 120 square feet (11.15 m^2), the least dimension of which shall be a minimum of 10 feet (3048 mm), excluding such spaces as vestibules and work counters, and shall meet the requirements in Section 1224.4.4.1.*

1226.6.1.3 Dental examination and treatment areas. *When provided, the examination and treatment space shall be permitted to be a room or a patient care station in an open treatment area.*

1226.6.1.3.1 Area. *The treatment space shall have a minimum clear floor area of 80 square feet (7.4 m^2). This space is required for each station in an open operatory or treatment area. A minimum of 3 feet (915 mm) clearance shall be provided along the full length of one side of the chair, the head of the chair, and between the cuspidor and the head of the chair on the other side for assisting dental staff.*

1226.6.1.3.2 Pediatric patients. *At least one private consultation/treatment room shall be provided when pediatric patients are treated in a facility.*

1226.6.1.3.3 Handwashing. *Each treatment room shall include a handwashing station. If treatment is provided at stations in an open operatory, a handwashing station may be permitted to serve two treatment stations.*

1226.6.1.3.4 Imaging. *If provided, the space for a dental panographic x-ray system and printer shall comply with shielding requirements in Section 1226.5.5.2 and alcove requirements in Section 1224.18.1.1.*

1226.6.1.4 Oral surgery. *When provided, treatment areas for procedures for which general anesthesia is used on more than five patients at a time shall comply with the requirements in Section 1226.8.*

1226.6.2 Support areas for examination rooms.

1226.6.2.1 Nurse station. *Refer to Section 1226.4.13.1.*

1226.6.2.2 Medication station. *Refer to Section 1226.4.13.2.*

1226.6.2.3 Clean utility room. *Refer to Section 1226.4.13.3.*

1226.6.2.4 Soiled workroom or soiled linen holding. *Refer to Section 1226.4.13.4.*

1226.6.2.5 Consultation room. *Dental facilities must provide a consultation room for private conferences with patients.*

1226.6.2.6 Sterilization facilities. *If sterile processing and/or high level disinfection is provided, the sterile processing room shall consist of a decontamination area and a clean work area. The sterile processing/high level disinfection room shall be designed to provide one-way flow of contaminated materials/instruments to the sterilizer/high level disinfection equipment. Sterile/high level disinfected instruments should be distributed from the area in such a manner that processed items do not pass through the decontamination area.*

1226.6.2.6.1 Decontamination area. *The decontamination area shall be equipped with the following:*

1. *Countertop, separated from clean countertop by 4 feet minimum distance.*
2. *Handwashing station separate from the instrument washing sink.*
3. *Sink for washing instruments. To avoid splash, the decontamination sink shall be separated from the clean work area by either a 4-foot distance from the edge of the sink or a separating wall or screen. If a screen is used, it shall extend a minimum of 4 feet (1220 mm) above the sink rim.*
4. *Storage for supplies.*

1226.6.2.6.2 Clean work area. *The clean work area shall be equipped with the following:*

1. *Countertop, separated from decontamination countertop by 4 feet minimum distance.*
2. *Sterilizer/high level disinfection equipment, as required for the services provided.*
3. *Handwashing station, may share with decontamination area handwashing station.*
4. *Built-in storage for supplies.*

1226.6.2.7 Laboratory. *Facilities for laboratory services shall be provided in dental facilities or through a contract arrangement with a laboratory service.*

1226.6.3 Support areas for patients.

1226.6.3.1 Patient toilet room(s). *Refer to Section 1226.4.14.1.*

1226.6.3.2 Specimen collection and/or blood collection facilities. *When provided, refer to Section 1224.4.4.2.*

1226.6.4 General support services and facilities.

1226.6.4.1 Garbage, solid waste, medical waste and trash storage. *Refer to Section 1226.4.9.*

1226.6.4.2 Housekeeping room. *Refer to Section 1224.4.15.*

1226.6.5 Public and administrative areas.

1226.6.5.1 Public area.

1226.6.5.1.1 Reception. *Refer to Section 1226.4.16.1.1.*

1226.6.5.1.2 Outpatient waiting room. *Refer to Section 1224.4.5.*

1226.6.5.1.3 Public toilet(s). *Refer to Section 1224.4.5.*

1226.6.5.1.4 Public telephone access. *Refer to Section 1224.4.5.*

1226.6.5.1.5 Drinking fountain(s). *Refer to Section 1224.4.5.*

1226.6.5.2 Administrative services

1226.6.5.2.1 Medical records storage. *Refer to Section 1226.4.16.2.1.*

1226.6.5.2.2 Equipment and supply storage. *Refer to Section 1226.4.16.2.2.*

1226.6.6 Support areas for staff.

1226.6.6.1 Staff toilet(s). *Refer to Section 1226.4.17.1.*

1226.6.6.2 Storage for employees. *Refer to Section 1226.4.17.2.*

1226.7 Reserved.

1226.8 SURGICAL CLINICS. *Outpatient surgical clinics, and outpatient clinical services of a hospital providing services equivalent to a surgical clinic, shall comply with Sections 1226.4.2 through 1226.4.8 and the provisions of this section.*

1226.8.1 Outpatient surgical service space.

1226.8.1.1 Operating room(s). *Refer to Section 1224.39.2, Item 1.*

1226.8.1.2 Perioperative services. *Provide preoperative patient holding and post-anesthesia recovery area. Refer to Section 1224.16.*

1226.8.1.3 Procedure room(s). *Procedure rooms are optional. When provided, they shall comply with Section 1224.4.4.1.4.*

1226.8.2 Support areas for outpatient surgery.

1226.8.2.1 Control station. *Refer to Section 1224.15.3.1.*

1226.8.2.2 Supervisor's office or station. *Refer to Section 1224.15.3.2.*

1226.8.2.3 Substerile areas. *When provided, refer to Section 1224.15.3.3.*

1226.8.2.4 Medication station. *Refer to Section 1226.4.13.2.*

1226.8.2.5 Scrub facilities*. Refer to Section 1224.15.3.5.*

1226.8.2.6 Clock. *Refer to Section 1224.15.3.6.*

1226.8.2.7 Soiled workroom. *Refer to Section 1224.15.3.7.*

1226.8.2.8 Clean utility room. *Refer to Section 1224.15.3.8.*

1226.8.2.9 Anesthesia workroom. *Refer to Section 1224.15.3.9.*

1226.8.2.10 Equipment storage room(s) for equipment and supplies used in outpatient surgery. *Refer to Section 1224.15.3.10.*

1226.8.2.11 Staff clothing change areas. *Refer to Section 1224.15.3.11.*

1226.8.2.12 Housekeeping room. *Refer to Section 1224.39.2.3.2.*

1226.8.2.13 Sterile and pharmaceutical supply storage. *Refer to Section 1226.4.13.5.*

1226.8.2.14 Sterilization facilities. *Refer to Section 1226.4.13.6.*

1226.8.3 Support areas for patients.

1226.8.3.1 Patient toilet room(s). *Refer to Section 1226.4.14.1.*

1226.8.3.2 Outpatient change area. *A separate space shall be provided where patients change out of their street clothing and are prepared for the procedure. This space shall include provisions for clothing storage, toilet room(s), sink, space for clothing change and gowning area.*

1226.8.4 General support services and facilities.

1226.8.4.1 Garbage, solid waste, medical waste and trash storage. *Refer to Section 1226.4.9.*

1226.8.4.2 Areas for off-site laundry services. *Refer to Section 1226.4.15.1.*

1226.8.5 Public and administrative areas.

1226.8.5.1 Public area.

1226.8.5.1.1 Reception. *Refer to Section 1226.4.16.1.1.*

1226.8.5.1.2 Outpatient waiting room. *Refer to Section 1224.4.5.*

1226.8.5.1.3 Public toilet(s). *Refer to Section 1224.4.5.*

1226.8.5.1.4 Public telephone access. *Refer to Section 1224.4.5.*

1226.8.5.1.5 Drinking fountain(s). *Refer to Section 1224.4.5.*

1226.8.5.2 Administrative services

1226.8.5.2.1 Medical records storage. *Refer to Section 1226.4.16.2.1.*

1226.8.6 Support areas for staff.

1226.8.6.1 Staff toilet(s). *Refer to Section 1226.4.17.1.*

1226.8.6.2 Storage for employees. *Refer to Section 1226.4.17.2.*

CHRONIC DIALYSIS CLINICS.

1226.9 CHRONIC DIALYSIS CLINICS. *Chronic dialysis clinics and outpatient clinical services of a hospital providing services equivalent to a chronic dialysis clinic shall comply with Sections 1226.4.3 through 1226.4.8 and the provisions of this section.*

1226.9.1 Examination and treatment rooms.

1226.9.1.1 Examination room(s). *An examination room with a handwashing fixture shall be provided with a minimum clear floor area of 100 square feet (9.29 m^2).*

1226.9.1.2 Treatment room(s)*. When provided, refer to Section 1224.4.4.1.*

1226.9.1.3 Individual patient treatment areas. *Individual patient treatment areas shall contain at least 80 square feet (7.44 m^2). There shall be at least a 4-foot (1219 mm) space around and between beds and/or lounge chairs. In addition, the following shall be provided:*

1. ***Location.*** *The treatment area may be an open area and shall be separate from administrative area and outpatient waiting room.*
2. ***Privacy.*** *An open unit shall be designed to provide visual privacy for each patient.*

1226.9.1.4 Reception. *Refer to Section 1226.4.16.1.1.*

1226.9.1.5 Outpatient waiting room. *Refer to Section 1224.4.5.*

1226.9.1.6 Bloodborne infection isolation room. *A minimum of one bloodborne infection isolation room of at least 120 square feet (11.15 m^2) of clear floor space shall be provided for patients. This room shall contain a counter and handwashing station.*

1226.9.1.7 Airborne infection isolation exam/treatment room. *When provided, refer to Section 1224.4.4.1.3.*

1226.9.1.8 Home training. *When provided in the unit, a private treatment area of at least 120 square feet (11.15 m^2) shall be provided for patients who are being trained to use dialysis equipment at home. This room shall contain a counter, a handwashing station and a separate drain for fluid disposal.*

1226.9.2 Support areas for examination and treatment rooms.

1226.9.2.1 Administrative center or nurse station. *Administrative center or nurse station shall be located within the dialysis treatment area and designed to provide visual observation of all patient stations. In addition, refer to Section 1226.4.13.1 for nurse station(s) requirements.*

1226.9.2.1.1 Handwashing stations. *Handwashing stations shall be directly accessible to the administrative center or nurse station and to patient treatment areas. Handwashing stations shall be provided for each four patient stations and for each major fraction thereof. These shall be uniformly distributed to provide equal access from each patient station. Refer to Section 1224.3 for the definition of a handwashing station.*

1226.9.2.2 Medication station. *Refer to Section 1226.4.13.2.*

1226.9.2.3 Clean utility room. *Refer to Section 1226.4.13.3.*

1226.9.2.4 Soiled workroom or soiled linen holding. *Refer to Section 1226.4.13.4.*

1226.9.2.5 Housekeeping room. *Provide a housekeeping room that is immediately accessible to, and for the exclusive use of, the unit. This room shall have a minimum floor area of 15 square feet (1.4 m^2) and shall include the following:*

1. *Service sink or floor receptor*
2. *Supply storage*
3. *Housekeeping equipment storage*

1226.9.2.6 Nourishment room. *When provided, refer to Section 1226.4.13.7.*

1226.9.2.7 Sterilization facilities. *When provided, refer to Section 1226.4.13.6.*

1226.9.3 Administrative services. *Provide office and clinical work space including the following:*

1226.9.3.1. Medical records storage. *Refer to Section 1226.4.16.2.1.*

1226.9.3.2 Equipment and supply storage. *Refer to Section 1226.4.16.2.2.*

1226.9.4 Support areas for patients.

1226.9.4.1 Patient toilet room(s). *Provide patient toilet room(s) directly accessible from treatment area. The toilet shall be equipped with bedpan flushing attachment(s). Refer to Section 1226.4.14.1.*

1226.9.4.2 Patient storage. *Provide space for storage of patient clothing and personal items.*

1226.9.4.3 Specimen collection facilities. *When provided, refer to Section 1224.4.4.2.*

1226.9.5 General support services and facilities.

1226.9.5.1 Garbage, solid waste, medical waste and trash storage. *Refer to Section 1226.4.9.*

1226.9.5.2 Areas for off-site laundry services. *Refer to Section 1226.4.15.1.*

1226.9.5.3 Reprocessing room. *When dialyzers are reused, a reprocessing room is required and sized to perform the functions required and include one-way flow of materials from soiled to clean with provisions for a refrigerator for temporary storage of dialyzer, decontamination/cleaning areas, sinks, processors, computer processors and label printers, packaging area, dialyzer storage and disinfectants storage.*

1226.9.5.4 Repair room. *When required, an equipment repair and breakdown room shall be equipped with a handwashing fixture, deep service sink, work counter and storage cabinet. Provide water supply and drain connection for testing machines.*

1226.9.5.5 Mixing room. *Each facility using a central batch delivery system shall provide, either on the premises or through written arrangements, individual delivery systems for the treatment of any patient requiring special dialysis solutions. The mixing room shall also include a sink, storage space and holding tanks.*

1226.9.5.6 Water treatment room. *The water treatment equipment shall be located in an enclosed room.*

1226.9.6 Support areas for staff.

1226.9.6.1 Staff toilet(s). *Refer to Section 1226.4.17.1.*

1226.9.6.2 Storage for employees. *Refer to 1226.4.17.2.*

REHABILITATION CLINICS.

1226.10 REHABILITATION CLINICS. *Rehabilitation clinics and outpatient clinical services of a hospital providing services equivalent to a rehabilitation clinic shall comply with Sections 1226.4.3 through 1226.4.8 and the provisions of this section.*

SUPPORT AREAS FOR THERAPY SERVICES.

1226.10.1 Support area for patients.

1226.10.1.1 Patient toilet room(s). *Refer to Section 1226.4.14.1.*

1226.10.2 General support.

1226.10.2.1 Garbage. *Refer to Section 1226.4.9.*

1226.10.2.2 Housekeeping. *Refer to Section 1224.4.15.*

1226.10.2.3 Areas for off-site laundry services. *Refer to Section 1226.4.15.1.*

1226.10.3 Public and administrative.

1226.10.3.1 Public area.

1226.10.3.1.1 Reception. *Refer to Section 1226.4.16.1.1.*

1226.10.3.1.2 Outpatient waiting room. *Refer to Section 1224.4.5.*

1226.10.3.1.3 Toilets. *Refer to Section 1224.4.5.*

1226.10.3.1.4 Drinking fountain. *Refer to Section 1224.4.5.*

1226.10.3.1.5 Telephone. *Refer to Section 1224.4.5.*

1226.10.3.2 Administrative services. *Provide office and clinical work space including the following:*

1226.10.3.2.1 Medical records storage. *Refer to Section 1226.4.16.2.1.*

1226.10.3.2.2 Equipment and supply storage. *Refer to Section 1226.4.16.2.2.*

1226.10.4. Support areas for staff.

1226.10.4.1 Staff toilet(s). *Refer to Section 1226.4.17.1.*

1226.10.4.2 Storage for employees. *Refer to Section 1226.4.17.2.*

REHABILITATION THERAPY SERVICE SPACES.

1226.10.5 Physical therapy service space. *A physical therapy service space shall be provided. The service space shall comply with the following provisions:*

1. ***Individual treatment area(s).*** *Refer to Section 1224.35.2, Item 1.*
2. ***Handwashing station(s).*** *Refer to Section 1224.35.2, Item 2.*
3. ***Exercise area.*** *Refer to Section 1224.35.2, Item 3.*
4. ***Clean linen and towel storage.*** *Refer to Section 1224.35.2, Item 4.*
5. ***Storage for equipment and supplies.*** *Refer to Section 1224.35.2, Item 5*
6. ***Separate storage for soiled linen, towels and supplies.*** *Refer to Section 1224.35.2, Item 6.*

1226.10.6 Occupational therapy service space. *When an occupational therapy service is provided, the service space shall comply with following provisions:*

1. ***Work areas and counters.*** *Refer to Section 1224.35.3, Item 1.*
2. ***Handwashing station(s).*** *Refer to Section 1224.35.3, Item 2.*
3. ***Storage for supplies and equipment.*** *Refer to Section 1224.35.3, Item 3.*
4. ***Area for teaching daily living activities.*** *Refer to Section 1224.35.3, Item 4.*

1226.10.7 Speech pathology and/or audiology service space. *When speech pathology and/ or audiology service(s) is provided, the service space shall comply with the following provisions:*

1. ***Interview, consultation and treatment space.*** *Refer to Section 1224.35.4, Item 1.*
2. ***Waiting area.*** *Refer to Section 1224.35.4, Item 2.*
3. ***Handwashing station(s).*** *Refer to Section 1224.35.4, Item 3.*
4. ***Testing unit.*** *If an audiology service is provided. Refer to Section 1224.35.4, Item 4.*

ALTERNATIVE BIRTHING CLINICS.

1226.11 ALTERNATIVE BIRTHING CLINICS. *Alternative birthing clinics and outpatient clinical services of a hospital providing services equivalent to alternative birthing clinics shall comply with Sections 1226.4.3 through 1226.4.8 and the provisions of this section:*

1226.11.1 Birthing service space.

1226.11.1.1 Birthing room. *A birthing room shall have a minimum clear floor area of 200 square feet (18.58 square meters), including the newborn care area. A birthing room shall have a minimum clear dimension of 12 feet (3658 mm). The maximum number of beds per room shall be one.*

1226.11.1.2 Location. *Birthing rooms shall be located out of the path of unrelated traffic and under direct supervision of the facility staff.*

1226.11.1.3 Nurse call system. *A nurse call system shall be located in the birthing room which will alert the nearest continually staffed administrative center or nurse station. Refer to Section 1224.4.6.5 for requirements.*

1226.11.1.4 Hand-washing stations. *A handwashing fixture, as defined in Section 1224.3, shall be located within or directly outside the room. If the fixture is located within the room, the fixture may be screened or within openable casework.*

1226.11.1.5 Lighting. *Lighting capable of 1076 lux (100 footcandles) at working surfaces shall be provided. Dimmer switches may be used.*

1226.11.1.6 Window. *Each birthing room shall have an outside window. Refer to Sections 1224.4.9.4 and 1224.4.9.5.*

1226.11.1.7 Privacy. *Windows or doors within a normal sightline that would permit observation into the room shall be arranged or draped, as necessary, for mother and newborn privacy.*

1226.11.1.8 Newborn care area. *When provided, a separate newborn care area shall be provided that is in addition to the birthing room.*

1226.11.1.9 Examination room. *When provided, the examination room shall meet the requirements of Section 1224.4.4.*

1226.11.2 Support areas for birthing services.

1226.11.2.1 Nurse station. *Refer to Section 1226.4.13.1.*

1226.11.2.2 Medication station. *Refer to Section 1226.4.13.2.*

1226.11.2.3 Clean utility room. *Refer to Section 1226.4.13.3.*

1226.11.2.4 Soiled utility or soiled holding room. *Refer to Section 1226.4.13.4.*

1226.11.2.5 Crash cart space. *Space for storing crash cart shall be provided.*

1226.11.2.6 Clean-up room. *Each birthing room shall have immediate access to a clean-up room with a handwashing station and work space which is separate from any sterilizing facilities. The clean-up room shall provide 24 square feet (2.23 m^2) per birthing room up to eight rooms, with no dimensions less than 6 feet (1829 mm).*

1226.11.2.7 Ice-making equipment. *Each facility shall have equipment to provide ice for treatments and nourishment. Ice-making equipment shall be permitted in the clean utility or the nourishment room/area. Ice intended for human consumption shall be provided in the nourishment station and shall be served from self-dispensing ice-makers.*

1226.11.2.8 Nourishment room or area. *When provided, refer to Section 1226.4.13.7.*

1226.11.2.9 Medical gas outlets. *When provided, oxygen and suction capabilities may be portable or piped.*

1226.11.3 Support areas for mother and newborn.

1226.11.3.1 Patient toilet room(s). *Each birthing room shall have direct access to a private toilet room with lavatory, shower or tub and nurse call system. Facilities for cleaning bedpans shall be provided in the toilet room.*

1226.11.4 General support services and facilities.

1226.11.4.1 Housekeeping room. *Refer to Section 1224.4.15.*

1226.11.4.2 Garbage, solid waste, medical waste and trash storage. *Refer to Section 1226.4.9.*

1226.11.4.3 Areas for off-site laundry services. *Refer to Section 1226.4.15.1.*

1226.11.5 Public and administrative areas.

1226.11.5.1 Public area.

1226.11.5.1.1 Reception. *Refer to Section 1226.4.16.1.1.*

1226.11.5.1.2 Outpatient waiting room. *Refer to Section 1224.4.5.*

1226.11.5.1.3 Public toilet(s). *Refer to Section 1224.4.5.*

1226.11.5.1.4 Public telephone. *Refer to Section 1224.4.5.*

1226.11.5.1.5 Drinking fountain. *Refer to Section 1224.4.5.*

1226.11.5.2 Administrative services.

1226.11.5.2.1 Medical records storage. *Refer to Section 1226.4.16.2.1.*

1226.11.5.2.2 Equipment and supply storage. *Refer to 1226.4.16.2.2.*

1226.11.6 Support areas for staff.

1226.11.6.1 Staff toilet(s). *Refer to Section 1226.4.17.1.*

1226.11.6.2 Storage for employees. *Refer to Section 1226.4.17.2.*

1226.11.6.3 Staff lounge. *Refer to Section 1226.4.17.3.*

1226.11.6.4 Staff clothing change area. *When provided, a changing room with shower shall be provided for staff to change into work attire.*

PSYCHOLOGY CLINICS.

1226.12 PSYCHOLOGY CLINICS. *Psychology clinics and outpatient clinical services of a hospital providing services equivalent to a psychology clinic shall comply with Sections 1226.4.3 through 1226.4.8 and the provisions of this section.*

Psychology clinics shall provide at least an interview room, consulting room and group therapy room.

1226.12.1 Public and administrative area.

1226.12.1.1 Public area.

1226.12.1.1.1 Reception. *Refer to Section 1226.4.16.1.1.*

1226.12.1.1.2 Outpatient waiting room. *Refer to Section 1224.4.5.*

1226.12.1.1.3 Public toilet(s). *Refer to Section 1224.4.5.*

1226.12.1.1.4 Drinking fountain. *Refer to Section 1224.4.5.*

1226.12.1.1.5 Public telephone. *Refer to Section 1224.4.5.*

1226.12.1.2 Administrative Area.

1226.12.1.2.1 Medical Records storage. *Refer to Section 1226.4.16.2.1.*

1226.12.1.2.2 Equipment and supply storage. *Refer to Section 1226.4.16.2.2.*

SECTION 1227 [OSHPD 4]-CORRECTIONAL TREATMENT CENTERS

1227.1 Scope. *The provisions of this section shall apply to correctional treatment centers.*

1227.2 Application. *New buildings and additions, alterations or repairs to existing buildings subject to licensure shall comply with applicable provisions of the California Electrical Code, California Mechanical Code, California Plumbing Code and California Fire Code (Parts 3, 4, 5 and 9 of Title 24) and this section.*

Note: *Refer to Section 1224.2, Exception 6.*

1227.3 Definitions.

BASIC SERVICES *for correctional treatment centers are those services required for licensure as a correctional treatment center, including medical, surgical, psychiatrist, psychologist, nursing, pharmacy and dietary. See "Optional services."*

HANDWASHING STATION. *An area that provides a handwashing fixture, cleaning agents and means for drying hands. Refer to the California Plumbing Code, Section 210.0 for the definition of handwashing fixture as amended in this section. The water supply spout discharge point may be less than 5 inches (127 mm) above the fixture rim. Fixtures shall be equipped with hot and cold supply controls not requiring direct contact of the hands for operation. The fixture cannot be equipped with an aerator or wrist or elbow blade handles.*

LICENSING AGENCY *is the California Department of Public Health.*

OPTIONAL SERVICES *are inpatient or outpatient services which are not required to be provided by law or regulation for licensure. An optional service, when provided, must accommodate the provisions of this section. See "Basic services."*

OUTPATIENT SERVICE *is an organizational unit of the correctional treatment center which provides nonemergency health care services to patients.*

1227.4 GENERAL CONSTRUCTION.

1227.4.1 Services/systems and utilities. *Correctional treatment centers shall comply with this section.*

1227.4.1.1 Oxygen, vacuum and medical air. *Correctional treatment centers shall comply with the requirements of Section 1224.4.6 wherever applicable.*

1227.4.2 Service spaces. *Spaces for dietary, laundry, morgue, ambulance entrance, receiving areas, power plants, mechanical equipment, incinerator, garbage can cleaning, automobile parking and storage areas for garbage, trash and medical gases shall be located and constructed to minimize noise, steam, odors and hazards in patient care areas and bedrooms.*

1227.4.3 Treatment spaces. *Radiology, laboratory, pharmacy and physical therapy spaces shall not be located in nursing units, surgical units, perinatal units, nursery areas, central sterilization rooms, food service areas, power plants, mechanical equipment rooms, maintenance shops, general storage, laundry, employees' dressing or housekeeping facilities.*

1227.4.4 Exam room. *Unless specified elsewhere, if an exam room is provided, it shall have a minimum clear floor area of 80 square feet (7.43 m^2), the least dimension of which shall be 8 feet (2438 mm) and contain a handwashing station.*

1227.4.5 Treatment room. *Unless specified elsewhere, if a treatment room is provided, it shall have a minimum clear floor area of 120 square feet (11.15 m^2), the least dimension of which shall be 10 feet (3048 mm). A minimum of 3 feet (914 mm) is required between the sides and foot of the bed/gurney/table and any wall or other fixed obstruction. The room shall contain an examination light, a work counter for medical equipment, a handwashing station, cabinets, medication storage and counter for writing or electronic documentation.*

1227.5 CORRIDORS.

1227.5.1 Width. *The minimum width of corridors shall be 8 feet (2438 mm).*

Exception: *Patient-care corridors in correctional treatment centers for psychiatric care of patients who are not bedridden shall have a minimum clear and unobstructed width of 6 feet (1829 mm). For the purpose of this section, bedridden patients shall be defined as patients confined to beds who would be transported or evacuated in beds or litters.*

1227.5.2 Service corridors width. *Service corridors with anticipated light traffic volume for nonpatient use may be reduced to a width of 5 feet (1524 mm) if approved by the enforcing agency.*

Exception: *Corridors in administrative and business areas may be reduced to a width of 44 inches (1118 mm).*

1227.5.3 Handrails. *Corridors for patient traffic in areas providing skilled nursing, intermediate, care or rehabilitation services shall be furnished with a handrail on both sides at a height not less than 30 inches (762 mm) or greater than 36 inches (914 mm).*

1227.5.4 Connections. *Corridor systems shall connect all patient rooms and essential services.*

1227.6 DOORS AND DOOR OPENINGS.

1227.6.1 Toilet room doors. *Doors to toilet rooms shall have an opening of not less than 32 inches (813 mm) clear in width and shall be equipped with hardware which will permit the door to swing outward or in a manner to negate the need to push against a patient who may have collapsed within the toilet room.*

1227.6.2 Pocket doors. *Pocket sliding doors are not permitted.*

Exception: *Doors not serving as exit doors from administration areas.*

1227.6.3 Door view windows. *Doors to patient bedrooms shall be provided with a view window with a minimum area of 288 square inches (0.186 m^2). Window sill height shall not be higher than 42 inches (1067 mm) from the floor.*

1227.7 WINDOWS AND SCREENS.

1227.7.1 Natural light. *Rooms approved for the housing of patients shall be provided with natural light by means of glazed openings.*

1227.7.2 Screens. *When windows are operable, they shall be provided with insect screens of 16 meshes to the inch.*

1227.7.3 Light and ventilation. *All portions of a building used by patients, personnel or other persons shall be provided with artificial light and a mechanically operated ventilating system as specified in the California Electrical Code and the California Mechanical Code.*

1227.7.4 Patient viewing windows. *Each patient bedroom shall be provided with viewing windows from the corridor to allow full and unobstructed visual observation of the patient.*

1227.8 CEILING HEIGHTS.

1227.8.1 Minimum height. *The minimum height of ceilings shall be 8 feet (2438 mm).*

Exception: *Closet, toilet rooms and bathroom minimum ceiling heights shall not be less than 7 feet (2134 mm).*

1227.8.2 Minimum height with fixed ceiling equipment. *Rooms containing ceiling-mounted, major fixed equipment or ceiling-mounted surgical light fixtures shall have ceiling heights to accommodate the equipment or fixtures and their normal movement.*

1227.9 INTERIOR FINISHES.

1227.9.1 Floor finishes.

1227.9.1.1 Floor finishes. *Shall be smooth, waterproof and durable.*

Exception: *Upon written appropriate documented request, the enforcing agency may grant approval of the installation of carpet. See Table 1224.4.11.*

1227.9.1.2 Resilient flooring. *If used in toilet and bathing rooms, shall be continuous and extend upward onto the walls at least 5 inches (127 mm).*

1227.9.2 Wall bases.

1227.9.2.1 Materials and installation. *The material and textures of bases and the installation thereof shall be such as to minimize dust-catching surfaces, moisture, infiltration and the harboring of vermin.*

Exception: *In locations where carpet is permitted as a floor finish material, the use of carpeted base (coved or strip base) up to a maximum height of 5 inches (127 mm) is also permissible.*

1227.9.2.2 Wood bases. *Wood bases are prohibited except in administration departments and other offices described in Section 1227.16.*

Exceptions: *Wall bases in kitchens, operating rooms, delivery rooms, emergency operating rooms, cast rooms, special procedure rooms and other areas which are subject to wet cleaning methods shall be made integral and coved with the floor, and constructed without voids at the intersection of floor and wall surfaces.*

1227.9.3 Walls. *Interior wall finishes shall be smooth, washable and durable.*

1227.9.4 Ceilings. *Ceiling finishes shall be in compliance with Table 1224.4.11.*

Exceptions: *Walls and ceiling finish requirements do not apply to boiler rooms, mechanical equipment rooms, administration departments, other offices, enclosed stairways, maintenance shops and similar spaces.*

1227.10 ELEVATORS.

1227.10.1 *Patient elevators shall have minimum inside platform dimensions of 5 feet by 8 feet (1524 mm by 2438 mm) and a minimum clear door opening of 4 feet, 0 inches (1118 mm).*

1227.10.2 *Passenger elevators shall have minimum inside platform dimensions of 4 feet, 8 inches by 7 feet, 4 inches (1422 mm by 2236 mm).*

1227.10.3 *Buildings over one story in height with accommodations or services for patients on floors without grade level entrance shall provide at least one passenger or patient elevator.*

1227.10.4 *If bed patients are accommodated on one or more floors, other than the main entrance floor or where operating rooms or delivery rooms are above or below the main entrance floor, at least one patient elevator shall be provided.*

1227.10.5 *At least one patient elevator and one service elevator shall be provided in correctional treatment centers with a capacity of 60 to 149 beds on floors other than the main entrance floor.*

1227.10.6 *At least one patient elevator, one passenger elevator and one service elevator shall be provided in hospitals with a capacity of 150 or more beds on floors other than the main entrance floor.*

1227.10.7 *If elevators in the correctional institution meet the above size requirements and are easily accessible, the elevators need not be duplicated in the correctional treatment centers.*

1227.11 GARBAGE-SOLID WASTE AND TRASH STORAGE. *Rooms or screening enclosures shall be provided for the washing and cleaning of garbage containers and for the storage of garbage, trash and other solid wastes. Such rooms or screening enclosures shall include the following:*

1. *A concrete floor with a curb and with a drain connected to the sewer.*
2. *Steam or hot-water and cold-water supply.*

3. *A minimum floor area of .5 square feet (0.046 m^2) per bed, but not less than 25 square feet (2.32 m^2), the least dimension of which shall be 4 feet (1219 mm).*
4. *A method of limiting access to the material except by authorized persons.*

BASIC SERVICES.

1227.12 NURSING SERVICE SPACE.

1227.12.1 Patient bedrooms. *Patients shall be accommodated only in rooms with the following minimum floor area, exclusive of toilet rooms, wardrobes, entrance vestibules, and fixed furnishings or equipment.*

1. *Single-patient rooms: 110 square feet (10.22 m^2).*
2. *Multi-patient rooms: 80 square feet (7.43 m^2) per bed.*

1227.12.2 Distance. *A minimum distance of 3 feet (914 mm) shall be provided between beds and 4 feet (1219 mm) between the foot of beds and walls or fixed objects in multipatient rooms, and 3 feet (914 mm) in single-patient rooms.*

1227.12.3 Airborne infection isolation rooms. *Single rooms shall be provided for the isolation of patients with airborne communicable disease at a ratio of one room for each 35 beds, and for each major fraction thereof. At least one airborne infection isolation room shall be provided. Airborne infection isolation rooms shall be labeled with the words "Airborne Infection Room" on or adjacent to the anteroom side of the door between the isolation room and the anteroom.*

1227.12.3.1 Alternates. *Alternate designs for modifications to isolation rooms in operation prior to the effective date of this section may be utilized when it can be demonstrated that the alternate design meets performance requirements, without compromising any health or life-safety requirement.*

1227.12.3.2 Anteroom doors. *Airborne infection isolation room(s) shall have self-closing and latching devices on all anteroom doors.*

1227.12.3.3 Anteroom. *A separate anteroom shall be provided between the airborne infection isolation room and the corridor, which shall constitute the primary entrance to the negative pressure isolation room. This anteroom shall have a handwashing station, work counter at least 3 feet (914 mm) long, cabinets and space to gown and to store clean and soiled materials. There shall be a view window from the anteroom to the isolation room and means to allow for airflow from the anteroom into the negative pressure isolation room. Doors shall be aligned to allow large equipment to be wheeled into the airborne infection isolation room unless a secondary door complying with Section 1227.12.3.4 is provided. One anteroom may serve no more than two airborne infection isolation rooms.*

1227.12.3.4 Secondary entry. *When a secondary entry is provided directly from the corridor to the negative-pressure isolation room, secondary doors shall be provided with locking devices which are readily openable from the room side and which are readily openable by the facility staff on the other side. When key locks are used on isolation rooms, keys shall be located at the nurse station in a prominent readily accessible location.*

1227.12.3.5 Adjoining toilet facilities. *Each isolation room shall have its own toilet room facilities with an emergency nurse call system, a lavatory, a shower providing a seat or a space for a shower chair and a toilet equipped with a bedpan flushing attachment with a vacuum breaker.*

1227.12.3.6 Sealed-tight room. *Airborne infection isolation room perimeter walls, ceiling, floors, doors and penetrations shall be sealed tightly to minimize air infiltration from the outside or from other spaces.*

1227.12.4 Protective environment rooms. *Protective environment rooms for the protection of certain immunosuppressed patients may be provided by the facility. Protective environment rooms shall be labeled "Protective Environment Room" on or adjacent to the anteroom side of the door between the isolation room and the anteroom.*

1227.12.4.1 Anteroom doors. *Airborne infection isolation room(s) shall have self-closing and latching devices on all anteroom doors.*

1227.12.4.2 Anteroom. *A separate anteroom shall be provided between the protective environment room and the corridor or adjoining space which shall constitute the only entrance to the protective environment isolation room. This anteroom shall have a handwashing station, work counter at least 3 feet (914 mm) long, cabinets and space to gown and to store clean and soiled materials. There shall be a view window from the anteroom to the positive-pressure isolation room. There shall be means to allow for airflow from the protective environment room into the anteroom. Anteroom doors shall be aligned so that large equipment can be wheeled into the isolation room. One anteroom may serve no more than one protective environment room.*

Exception: *Alternate designs for protective environment rooms, without individual anterooms, may be approved by the enforcement agency when it can be demonstrated that the alternate design meets the requirements of the California Mechanical Code and does not compromise or alter any health or fire-protection component, assembly or system.*

1227.12.4.3 Toilet room(s). *Adjoining toilet room facilities shall meet the requirements of Section 1227.12.3.5.*

1227.12.4.4 Sealed-tight room. *Protective environment room perimeter walls, ceiling, floors, doors and penetrations shall be sealed tightly to minimize air infiltration from the outside or from other spaces.*

1227.12.5 Identification. *Each patient room shall be labeled with an identification number, letter or combination of the two.*

1227.12.6 Seclusion rooms. *Seclusion rooms shall comply with the requirements of Section 1224.4.4.1 and the following:*

1227.12.6.1 Seclusion rooms. *Provide for disturbed/special patients at a ratio of one room for each 30 beds and for each major fraction thereof. At least one seclusion room shall be provided in each nursing service unit.*

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1227.12.6.2 Viewing windows. *Seclusion rooms shall be provided with viewing windows to allow full and unobstructed visual observation of the patient. They shall be located near the nurse station and toilet room facilities.*

1227.12.6.3 Appendages and equipment. *Rooms shall be free of appendages and equipment which could facilitate suicide or self-mutilation.*

1227.12.7 Nurse station. *A nurse station shall be provided within each nursing unit.*

1227.12.7.1 Components. *Nurse stations shall be provided with a cabinet, a desk, space for records, a bulletin board, a telephone, and a specifically designated and lockable and illuminated medicine storage compartment and a handwashing fixture. If a separate medicine room is provided, it shall have a lockable door and a medicine sink. This sink cannot replace the required nurse station handwashing station.*

1227.12.7.2 Size. *Nurse stations serving 25 or less beds shall have a minimum floor area of 100 square feet (9.29 mm^2). Nurse stations servicing more than 25 beds shall have a minimum floor area of 125 square feet (11.6 m^2). The minimum dimension of any nurse station shall not be less than 8 feet (2438 mm).*

1227.12.7.3 Distance. *The distance between the nurse station entrance and the center of the doorway of the most remote patient bedroom shall not exceed 90 linear feet (27432 mm).*

Exception: *This section does not preclude designs based on primary nursing concepts incorporating more than one single nursing station of less than 100 square feet (9.29 m^2) each and an additional work space or station for unit clerk/receptionist junctions.*

1227.12.7.4 Correctional officer. *A separate space for the correctional officer may adjoin the nurse station but shall not be included in the minimum square footage requirement for a nurse station.*

1227.12.8 Utility rooms. *Utility rooms shall be provided in each nursing unit. Soiled and clean utility or holding rooms shall be separated and have no direct connection.*

1227.12.8.1 Clean utility room. *Clean utility rooms shall contain a work counter, handwashing station and storage facilities unless the room is used only for storage and holding as part of a system for distribution of clean and sterile supplies, in which case the work counter and handwashing fixture may be omitted.*

1227.12.8.2 Soiled workroom or soiled holding room. *Soiled utility rooms shall contain a flushing-rim clinical sink or equivalent flushing-rim device, handwashing station, work counter, waste receptacles and linen hampers unless the room is used only for the temporary holding of soiled materials, in which case the flushing-rim clinical sink, handwashing station and work counter may be omitted. However, if the flushing-rim clinical sink is omitted, other provisions for disposal of liquid waste shall be provided.*

1227.12.9 Treatment and exam rooms. *If treatment rooms or exam rooms are provided, they shall comply with Sections 1227.4.4 and 1227.4.5.*

1227.12.10 Toilet and bath facilities. *Separate toilet room facilities shall be provided for the use of patients and personnel.*

1227.12.10.1 Bathroom facilities. *Provide for patients in the nursing unit in at least the following ratios:*

Bathtubs or showers	*1:12 patients*
Lavatories	*1:8 patients*

(Fixtures shall be equipped without aerators and may have conventional controls. Gooseneck spouts shall not be used.)

Toilets	*1:6 patients*

Fixtures serving individual patient rooms shall not be considered as meeting the required ratios for bedrooms not served by individual adjoining toilet rooms or bathrooms.

Changes in these ratios for wards or units in which bed patients only are to be cared for may be permitted by the enforcing agency.

1227.12.11 Patient/nurse call system. *A patient/nurse call system shall be provided in compliance with Table 1224.4.6.5 and the provisions of Section 517.123 of the California Electrical Code.*

1227.13 PHARMACEUTICAL SERVICE SPACE.

1227.13.1 Licensed pharmacy. *A licensed pharmacy shall be provided and shall comply with the provisions of Section 1250.*

1227.13.1.1 Entrance and waiting. *If the pharmacy dispenses directly to inmates from the correctional institution, an entrance and a waiting area separate from the inpatient areas shall be provided.*

1227.14 DIETETIC SERVICE SPACE.

1227.14.1 Dietetic service space. *The dietetic service space shall accommodate the provisions of Section 1225.4.2.*

Exceptions:

1. *Unless the dietetic service in the correctional institution is found acceptable to the licensing agency.*
2. *A contractual arrangement for dietetic services with another health facility is acceptable to the licensing agency.*

1227.15 OFFICES. *Office spaces shall be provided for the provisions of nursing, physician, psychiatric and psychological services.*

1227.15.1 Consultation/interviews. *Consultation/interview rooms shall be provided.*

1227.15.2 Conference/group activities. *Separate rooms or spaces shall be provided for conferences and group activities.*

Exception: *If conference room or space is available to the correctional treatment facility staff in the correctional institution, this room or space need not be duplicated.*

1227.16 ADMINISTRATION SPACE.

1227.16.1 Administration. *An administration area shall be provided which shall provide for the following functions:*

1. *Waiting area.*
2. *Offices for the administrator and clerical personnel.*

1227.16.2 Records. *Spaces shall be provided which accommodate the following functions:*

1. *Work area for sorting and recording records, for either paper or electronic media.*
2. *Secure storage area for medical records, for either paper or electronic media.*

1227.17 CENTRAL STERILE SUPPLY.

1227.17.1 Minimum requirements. *A central supply and sterilizing area shall be provided. Rooms and spaces shall accommodate the following services and equipment:*

1. *Soiled work area. A receiving and gross cleaning area which shall contain workspace and equipment for cleaning medical and surgical equipment and for disposal of or processing of soiled material.*
2. *Clean work area. A clean work area which shall contain work space and equipment for sterilizing medical and surgical equipment and supplies.*
3. *Sterilizing space.*

   Exception: *Items 1 through 3 do not apply to facilities with contractual arrangements for outside autoclaving and sterilizing services.*
4. *Storage. Space for sterile supplies and unsterile supplies.*

1227.17.2 Sterilizers and autoclaves. *All sterilizers and autoclaves which emit steam exhaust shall be vented to the outside of the building. Such vents shall be independent from the plumbing vent system.*

Exception: *Small instrument sterilizers.*

1227.18 STORAGE.

1227.18.1 General storage. *Correctional treatment centers shall provide combined general and specialized storage space in accordance with the following:*

1 to 10 beds	*120 square feet (11.15 m^2) minimum*
11 to 100 beds	*12 square feet (1.11 m^2) per bed*
Over 100 beds	*1,200 square feet (111.48 m^2) plus 5 square feet (0.46 m^2) per bed for each bed over 100*

1227.18.2 Specialized storage. *Specialized storage spaces shall include the following:*

1. *Linen. Separate and enclosed facilities for clean and soiled linen in each nursing unit. The clean linen storage space shall have a minimum area of 10 square feet (0.93 m^2) and may be within the clean utility room. The soiled linen collection space shall have an area of no less than 10 square feet (0.93 m^2), and may be within the soiled utility room.*
2. *Supply. One supply storage space having a minimum area of 15 square feet (1.39 m^2) shall be provided in each nursing unit. Supply storage may be within the clean utility room used only as part of a system for distributing clean and sterile supplies.*
3. *Wheelchairs. A room or space shall be provided in each nursing unit for wheelchairs and stretchers. The wheelchair and stretcher space shall have a minimum area of 15 square feet (1.39 m^2).*
4. *Storage. Sterile and unsterile supplies shall be stored separately.*

1227.19 EMPLOYEE DRESSING ROOMS AND LOCKERS.

1227.19.1 Minimum facilities. *Correctional treatment centers shall provide the following:*

1. *Dressing rooms. Separate dressing rooms for male and female personnel with lockers, lavatory and toilet(s).*

   Exception: *If provided for the correctional treatment center staff in adjacent correctional institutions, dressing rooms and lockers need not be duplicated.*

1227.20 HOUSEKEEPING ROOM.

1227.20.1 *A securely lockable housekeeping room with service sink and supply storage spaces shall be provided in each nursing unit.*

OPTIONAL SERVICES.

1227.21 SERVICE SPACES. *Service spaces, such as laboratory, radiology and any other services approved by the licensing agency, shall comply with the applicable space requirements of Sections 1224 and 1225. Service spaces shall also comply with applicable provisions of the California Building Standards Administrative Code (Part 1).*

1227.22 OUTPATIENT SERVICES. *The following shall be provided or made available to an outpatient service space.*

1227.22.1 Waiting. *Waiting area(s) shall be provided with access to toilet room facilities and a drinking fountain both meeting the requirements of Sections 1231.3.1, 1231.3.2 and 1231.3.3.*

1227.22.1.1 Holding cell. *If a temporary holding cell or room is used for this purpose, it shall comply with Section 1231.2.2.*

Exception: *The minimum floor area shall be 80 square feet (7.43 m^2).*

1227.23 24-HOUR MENTAL HEALTH CARE SERVICES.

1227.23.1 Program/dining space. *Provide within the Correctional Treatment Center for use by mental health treatment program patients, as is consistent with security requirements. Program/dining space shall be provided with a minimum floor area of 30 square feet (2.79 m^2) per patient served at a given time.*

1227.23.2 Mental health treatment. *Correctional treatment centers providing a mental health treatment program shall include one seclusion room providing direct observation of every portion of the room for every 15 mental health beds and for each major fraction thereof. At least one seclusion room shall be provided.*

SECTION 1228 [OSHPD 5]—ACUTE PSYCHIATRIC HOSPITALS

1228.1 Scope. *The provisions of this section shall apply to acute psychiatric hospitals.*

1228.2 Application. *An acute psychiatric hospital shall meet the requirements of Section 1228 for a non-medical unit based on the functional program. Specific application shall respond to the patient injury and suicide prevention component of the Patient Safety Risk Assessment prepared under California Administrative Code (Part 1 of Title 24) Section 7-119. If a psychiatric facility or unit provides acute medical care, it shall comply with Section 1224.31. New buildings and additions, alterations or repairs to existing buildings subject to licensure shall comply with applicable provisions of the California Electrical Code, California Mechanical Code, California Plumbing Code, California Energy Code, California Fire Code (Parts 3, 4, 5, 6 and 9 of Title 24) and this section.*

Note: *Refer to the applicable exceptions under Section 1224.2.*

1228.2.1 Functional program. *Refer to California Administrative Code (Part 1 of Title 24), Section 7-119, Functional Program, for requirements. Projects associated with acute psychiatric hospitals and with psychiatric nursing units in general acute-care hospitals shall include a Patient Safety Risk Assessment.*

1228.3 Definitions. *The definitions provided under Section 1224.3 apply to this section except as modified below:*

ACUTE PSYCHIATRIC HOSPITAL. *Acute psychiatric hospital means a hospital having a duly constituted governing body with overall administrative and professional responsibility and an organized medical staff which provides 24-hour inpatient care for mentally disordered, incompetent or other patients referred to in Division 5 (commencing with Section 5000) or Division 6 (commencing with Section 6000) of the Welfare and Institutions Code, including the following basic services: medical, nursing, rehabilitative, pharmacy and dietary services.*

BASIC SERVICES. *Basic services mean those essential services required by law for licensure as an acute psychiatric hospital including medical, nursing, rehabilitative, pharmaceutical, dietary and support services.*

HOSPITAL. *Hospital, where used in this section, means an acute psychiatric hospital.*

SALLY PORT. *A compartment provided with two or more doors where the intended purpose is to prevent continuous and unobstructed passage by allowing the release of only one door at a time.*

TAMPER RESISTANT *means designed to prevent damage, destruction or interference or indicates the product is designed to withstand dismantling, removal of the product, or interference with the operation of the product.*

1228.4 GENERAL CONSTRUCTION. *Acute psychiatric hospitals shall comply with the provisions under Section 1224.4, General Construction, where applicable, except as supplemented, amended or modified below. Specific application shall respond to the patient injury and suicide prevention component of the Patient Safety Risk Assessment prepared under California Administrative Code (Part 1 of Title 24), Section 7-119.*

1228.4.1 Jurisdiction.

1228.4.1.1 Services/systems and utilities. *Services/systems and utilities shall only originate in, pass through or under structures which are under the jurisdiction of the Office of Statewide Hospital Planning and Development (OSHPD).*

1228.4.1.2 Means of egress. *Means of egress shall only pass through structures that are under the jurisdiction of the Office of Statewide Hospital Planning and Development (OSHPD).*

1228.4.2 Reserved.

1228.4.3 Reserved.

1228.4.4 Support areas for patients.

1228.4.4.1 Examination and treatment rooms.

1228.4.4.1.1 Examination room. *Examination rooms in acute psychiatric hospitals shall meet the requirements of Section 1224.4.4.1.1 as amended below:*

1228.4.4.1.1.1 Location. *Examination rooms shall be permitted to serve several nursing units and shall be permitted to be on a different floor, unless prohibited by specific sections of this code or by the Patient Safety Risk Assessment.*

1228.4.4.1.1.2 Space requirements. *Examination rooms shall have a minimum clear floor area of 120 square feet (11.15 m^2).*

1228.4.4.1.2 Treatment room. *Where provided, refer to Section 1224.4.4.1.2.*

1228.4.4.1.3 Airborne infection isolation exam/treatment room. *Where provided, refer to Section 1224.4.4.1.3.*

1228.4.4.1.4 Seclusion room. *Refer to Section 1224.4.4.1.5.*

1228.4.4.1.5 Quiet room*. Where provided, a quiet room for a single patient who requires a period of solitude but does not require a seclusion room, shall have a minimum clear floor area of 80 square feet (7.43 m^2).*

1228.4.4.2 Reserved.

1228.4.4.3 Specimen and blood collection facilities. *Where provided, refer to Section 1224.4.4.3.*

1228.4.4.4 Medication station. *Refer to Section 1224.4.4.4.*

1228.4.4.5 Nourishment area or room. *Refer to Section 1224.4.4.5.*

1228.4.4.6 Clean utility/work room. *Refer to Section 1224.4.4.6.*

1228.4.4.7 Soiled utility/work room. *Refer to Section 1224.4.4.7.*

1228.4.5 Outpatient waiting rooms. *Where provided, refer to Section 1224.4.5.*

1228.4.6 Miscellaneous requirements. *Refer to Section 1224.4.6 for requirements regarding station outlets, gas and vacuum systems, hyperbaric facilities, laboratories and nurse call systems.*

1228.4.7 Corridors. *Refer to Section 1224.4.7.*

1228.4.8 Doors and door openings. *Refer to Section 1224.4.8 with the following modifications and amendments:*

1. *Where indicated by the Patient Safety Risk Assessment, toilet room doors shall be equipped with keyed locks that allow staff to control access to the toilet room.*
2. *Use of door closers is to be avoided unless required by other sections of this code.*
3. *Door hinges shall be designed to minimize accessible anchor points (e.g., cut hinge type, piano hinge, concealed hinge, etc.).*
4. *Except for specifically designed ligature-resistant hardware, door lever handles shall point downward when in the latched and in the unlatched position.*
5. *All hardware shall have tamper-resistant fasteners.*
6. *Soft doors may be used for patient room toilets where indicated in the Patient Safety Risk Assessment.*

1228.4.9 Windows and screens.

1. *Windows located in patient care areas or areas used by patients, shall limit the opportunities for patients to inflict harm to themselves or others.*
    1.1. *All glazing (interior and exterior) shall be fabricated with polycarbonate or laminate on the inside of the glazing or with any glazing that meets or exceeds the requirements for Class 1.4 per ASTM F1233-08 (2013), Standard Test Method for Security Glazing Material and Systems. Translucent film may be used up to 60 inches (1524 mm) for privacy.*

    Exception: *Use of tempered glass for interior borrowed lights shall be permitted where allowed by the Patient Safety Risk Assessment.*

    1.2. *Where window treatments are provided, they shall be designed without accessible anchor points.*

    1.3. *Where operable windows are provided in patient rooms or suites, openings shall be limited to prevent the passage of a 4-inch (102 mm) sphere.*
2. *Anchorage for windows and window assemblies (including frames, hinges and locking devices) shall be designed to resist impact loads applied from the inside and shall be tested in accordance with ANSI Z97.1, Safety Glazing Materials Used in Buildings.*
3. *A minimum net glazed area of not less than 8 percent of the floor area of each indoor activity space and dining space shall be provided for observation from nurse station.*

1228.4.10 Ceiling heights. *Refer to Section 1224.4.10 unless noted otherwise.*

1228.4.11 Interior finishes. *Interior finishes shall comply with Section 1224.4.11 as amended in this section. Special design consideration shall be given to injury and suicide prevention in the context of the Patient Safety Risk Assessment.*

1228.4.11.1 Reserved.

1228.4.11.2 Reserved.

1228.4.11.3 Reserved.

1228.4.11.4 Ceilings. *Refer to Section 1224.4.11.4 with the following modifications and amendments:*

Ceilings shall be monolithic in seclusion rooms, exam/treatment rooms, patient bedrooms, patient toilet rooms or patient bathing facilities.

1. *In these rooms, the ceiling shall be secured from patient access.*
2. *Mechanical, electrical and plumbing systems, other than terminal elements serving the room (e.g., diffusers, registers, luminaires, etc.), shall be concealed above the ceiling.*

1228.4.12 Courts. *Refer to Section 1224.4.12.*

1228.4.13 Elevators. *Refer to Section 1224.4.13.*

1228.4.14 Garbage, solid waste and trash storage. *Refer to Section 1224.4.14.*

1228.4.15 Housekeeping room. *Refer to Section 1224.4.15.*

1228.4.16 Laundry and trash chutes. *Refer to Section 1224.4.16.*

1228.4.17 Telephones. *Refer to Section 1224.4.17.*

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1228.4.18 Grab bars. *Refer to Section 1224.4.18 with the following modifications and amendments:*

1. *Grab bars, including those that are part of fixtures such as soap dishes, shall be sufficiently anchored to sustain a concentrated load of 250 pounds (113.4 kg).*
2. *Grab bars shall be graspable and shall be ligature resistant.*

1228.4.19 Noise control. *Refer to Section 1224.4.19.*

1228.4.20 Built-in furnishings. *Built-in furnishings in areas accessible to patients shall comply with the following requirements:*

1. *Built-in furnishings with doors or drawers shall not be provided.*
2. *Open shelves shall be fixed with tamper-resistant hardware.*
3. *When provided, clothing rods or hooks shall be ligature resistant.*
4. *The following are not permitted:*
    - 4.1. *Towel bars.*
    - 4.2. *Shower curtain rods.*
    - 4.3. *Lever handles, except where a specifically designed ligature-resistant lever handle is used.*

1228.4.21 Building systems.

1228.4.21.1 Lighting. *Lighting in areas identified in the Patient Safety Risk Assessment as high- and medium-risk areas shall be tamper resistant. Refer to California Electrical Code.*

1228.4.21.2 Receptacles. *When electrical receptacles are provided in a patient bedroom, the receptacles shall be in compliance with California Electrical Code.*

1228.4.22 Handwashing stations. *All handwashing fixtures that are accessible to patients, including those located in patient rooms and patient toilet rooms, shall include ligature-resistant features that do not compromise compliance with the hot and cold water supply controls, laminar flow and sink requirements of the California Plumbing Code. Handwashing fixtures within patient rooms and patient toilet rooms in psychiatric nursing units are not required to be equipped with gooseneck spouts and the discharge point may be less than 5 inches (127 mm) above the fixture rim.*

1228.5 Communication system. *Refer to Section 1224.5.*

BASIC SERVICES.

1228.6 Reserved.

1228.7 Reserved.

1228.8 Reserved.

1228.9 Reserved.

1228.10 Reserved.

1228.11 Reserved.

1228.12 Reserved.

1228.13 PSYCHIATRIC REHABILITATION ACTIVITIES SERVICE SPACE. *The psychiatric rehabilitation activities service space may be centralized for common use or may be located in each nursing unit in response to the Patient Safety Risk Assessment. The following areas are required in the psychiatric rehabilitation activities service space:*

1228.13.1 Patient care areas.

1228.13.1.1 Indoor activity rooms.

1. *At least two separate activity rooms, one appropriate for group recreation and one for quiet activities to serve as a patient lounge, shall be provided.*
2. *Space requirements. The combined area of these rooms shall have a minimum of 25 square feet (2.32 m^2) per patient bed, with at least 120 square feet (11.15 m^2) of clear floor area for each of the two spaces.*

1228.13.1.2 Outdoor activity area. *An outdoor activity area shall be provided. Outdoor areas shall meet the following requirements:*

1. *Fences and walls shall be designed to:*
    - 1.1. *Be installed with tamper-resistant hardware.*
    - 1.2. *Have a minimum height of 10 feet (3048 mm) above the outdoor area elevation.*
    - 1.3. *Be anchored and constructed to withstand the body force of a 350-pound (158-kg) person.*
2. *If provided, gates or doors in the fence or wall shall:*
    - 2.1. *Swing away from the outdoor activity area.*
    - 2.2. *Have the hinge installed on the outside of the outdoor activity area.*
    - 2.3. *Be provided with a locking mechanism that has been coordinated with egress requirements of Section 1004.5, Outdoor areas.*
3. *Lights shall not be accessible to patients. Lighting in the outdoor activity area shall not be pole mounted.*
4. *If provided, security cameras shall not be accessible to patients and cameras shall view the entire outdoor activity area.*

5. *If provided, furniture shall be secured from movement. Furniture shall not be placed in locations where it can be used to climb the fence or wall.*

1228.13.1.3 General support areas.

1. *Space for staff conferences, patient evaluation and progress reports.*
   - 1.1. *Staff conference room. A conference and treatment planning room shall be provided.*
   - 1.2. *Office space separate from the activities area.*
2. *Where outpatients are treated, there shall be a waiting area compliant with the requirements of Section 1228.4.5.*

1228.13.2 Physical therapy service space. *Where provided, the physical therapy service space shall comply with Section 1224.35.2.*

1228.13.3 Occupational therapy service space. *Where provided, the occupational therapy service space shall comply with Section 1224.35.3, Items 1, 2 and 3.*

1228.13.4 Speech pathology and/or audiology service space. *Where provided, the speech pathology service space shall comply with Section 1224.35.4.*

1228.14 PSYCHIATRIC NURSING SERVICE SPACE. *Psychiatric nursing units shall comply with the requirements of this section. If the nursing unit is a locked unit, the primary access point to the unit shall be through a sally port. For "secure treatment facilities," alternate designs for locked unit access without individual sally ports may be approved by the enforcement agency when it can be demonstrated that the alternate design meets performance requirements without compromising any health or life-safety requirement.*

1228.14.1 Patient rooms. *Each patient bedroom shall meet the following standards:*

1228.14.1.1 Capacity. *Maximum room capacity shall be two patients.*

Exception: *Where renovation of existing individual acute psychiatric hospital patient rooms is undertaken in facilities built under the 2013, or prior, California Building Code, maximum room capacity shall be no more than the present capacity, to a maximum of eight patients per patient room. Placement of beds shall not be more than three deep from the exterior window.*

1228.14.1.2 Space requirements. *Patient bedrooms shall have a minimum clear floor area inclusive of beds of 110 square feet (10.2 m^2) for single-bed rooms and 80 square feet (7.43 m^2) per bed for multiple-bed rooms.*

1228.14.1.3 Windows. *Each patient bedroom shall have a window in accordance with Section 1228.4.9.*

1228.14.1.4 Reserved.

1228.14.1.5 Outside exposure. *Refer to Section 1224.14.1.5.*

1228.14.1.6 Handwashing stations. *Handwashing stations shall comply with Section 1228.4.22. Handwashing stations are required in patient toilet rooms. Handwashing stations are not required in patient bedrooms.*

1228.14.1.7 Patient toilet room.

1. *Each patient shall have access to a toilet room without having to enter a corridor.*

   Exception: *Corridor access to the patient toilet room shall be permitted at pediatric or adolescent patient bedrooms and in specific patient bedrooms where the use of corridor access is part of the hospital's written Patient Safety Risk Assessment and management program.*
2. *One toilet room shall serve no more than two patient bedrooms and no more than four patients.*
3. *The toilet room shall contain a toilet and a handwashing station.*

1228.14.1.8 Patient storage. *Each patient room shall include a separate wardrobe, locker or closet for storing clothing and personal effects for each patient. Shelves for folded garments shall be used instead of arrangements for hanging garments.*

1228.14.1.9 Privacy. *Visual privacy in multibed rooms (e.g., cubicle curtains) is not required in psychiatric nursing units.*

1228.14.1.10 Grab bars*. Grab bars provided in accessible patient toilet rooms shall comply with Section 1228.4.18.*

1228.14.1.11 Room identification. *Each patient room shall be labeled with an identification number, letter or combination of the two.*

1228.14.2 Service areas. *Provision for the services listed below shall be in or immediately accessible to each psychiatric nursing unit. The size and location of each service area will depend upon the numbers and types of beds served. Identifiable spaces are required for each of the indicated functions. If a service area is specifically permitted to serve more than one nursing unit, there shall be at least one such service area located on each nursing unit floor.*

1228.14.2.1 Administrative center(s) or nurse station(s). *Refer to Section 1224.4.4.2.*

1228.14.2.1.1 Documentation area. *A separate charting area with provisions for acoustic and patient file privacy shall be provided.*

1228.14.2.1.2 Handwashing station(s). *Refer to Section 1228.4.22 for the definition of handwashing station. Handwashing stations in high- or medium-patient-risk areas shall be ligature resistant.*

1228.14.2.2 Office(s) for staff. *Office(s) for staff shall be provided.*

1228.14.2.3 Support areas for staff.

1. *Staff lounge facilities. Staff lounge facilities may be combined between units.*
2. *Staff toilet rooms.*

3. *Staff storage locations. Securable closets or cabinet compartments for the personal effects of nursing personnel shall be immediately accessible to the administrative center or nurse station.*

1228.14.2.4 Multipurpose room(s). *Multipurpose rooms shall be provided for staff, patients, patients' families for patient visits, conferences, reports, education, training sessions and consultation. These rooms shall be readily accessible to each nursing unit. One such room may serve several psychiatric nursing units.*

1228.14.2.5 Examination and treatment room*. Refer to Sections 1228.4.4.1.1 and 1228.4.4.1.2.*

1228.14.2.6 Clean utility/workroom. *Refer to Section 1228.4.4.6.*

1228.14.2.7 Soiled utility/workroom. *Refer to Section 1228.4.4.7.*

1228.14.2.8 Medication station. *Refer to Section 1228.4.4.4.*

1228.14.2.9 Clean linen storage. *Each psychiatric nursing unit shall contain a designated area for clean linen storage. This may be within the clean utility room or a separate closet.*

1228.14.2.10 Nourishment area*. Refer to Section 1228.4.4.5.*

1228.14.2.11 Ice-making equipment. *Each nursing unit shall have equipment to provide ice for treatments and nourishment. Ice-making equipment may be in the clean utility/workroom or at the nourishment station. Ice intended for human consumption shall be from self-dispensing icemakers.*

1228.14.2.12 Equipment and supply storage. *Appropriate room(s) shall be provided for storage of equipment necessary for patient care. Each unit shall provide not less than 15 square feet (1.39 m^2). Location of the storage areas shall not present a risk to the patient population as indicated in the functional program.*

1228.14.2.13 Reserved.

1228.14.2.14 Patient bathing facilities. *A bathtub or shower shall be provided for each six patient beds not otherwise served by bathing facilities at patient bedrooms.*

1228.14.2.15 Common patient toilet room(s). *In addition to the toilet rooms serving bed areas, common patient toilet rooms shall be located adjacent to multipurpose room(s) and within or directly accessible to each common patient bathing facility.*

1228.14.2.16 Emergency equipment storage. *Emergency equipment storage shall be provided at each nursing unit that is under visual observation of staff.*

1228.14.2.17 Housekeeping room. *One housekeeping room shall be permitted to serve more than one nursing unit on a floor. Refer to Section 1228.4.15.*

1228.14.2.18 Grab bars. *Grab bars in common patient toilets and bathing facilities shall be installed in accordance with Section 1228.4.18.*

SPECIAL PATIENT CARE ROOMS.

1228.14.3 Airborne Infection Isolation (AII) room(s). *There shall be at least one airborne infection isolation (AII) room provided for each 50 beds, and for each major fraction thereof. Airborne infection isolation rooms for pediatric/adolescent and forensic supplemental service nursing units shall be calculated independently from, and shall not be shared with each other or any other psychiatric nursing unit. Refer to Section 1224.14.3 and the general construction requirements of Section 1228.4. A bedpan flushing attachment is not required.*

1228.14.4 Protective environment room(s). *If provided, refer to Section 1224.14.4 and the general construction requirements of Section 1228.4.*

1228.14.5 Seclusion room(s). *There shall be at least one seclusion room provided for each 24 licensed beds, and for each major fraction thereof. At least one seclusion room shall be provided. A seclusion room may be shared by psychiatric nursing units. Seclusion rooms for pediatric/adolescent and forensic supplemental service nursing units shall be calculated independently from, and shall not be shared with each other or any other psychiatric nursing unit. Refer to the general construction requirements of Section 1228.4.*

1228.14.6 Quiet room. *A quiet room shall be provided in each psychiatric nursing unit for a patient who needs to be alone for a short period of time but does not require a seclusion room. Refer to Section 1228.4.4.1.5.*

1228.14.7 Visitor/consultation room(s*). Visitor/consultation rooms shall be provided at a room-to-bed ratio of one consultation room for each 12 psychiatric beds, or major fraction thereof with a minimum of one, in each psychiatric nursing unit. Additionally, the following requirements shall be met:*

1. *Visitor/consultation room(s) shall have a minimum clear floor area of 100 square feet (9.29 m^2).*
2. *The room(s) shall be designed for acoustical and visual privacy. Refer to Table 1224.4.19, Sound Transmission Limitations in Hospitals.*

1228.14.8 Conference room. *A conference and treatment planning room shall be provided for use by the psychiatric nursing unit.*

1228.14.9 Space for group therapy. *An enclosed private space with a minimum clear floor area of at least 225 square feet (20.90 m^2) shall be available for group therapy activities.*

1228.15 Reserved.

1228.16 Reserved.

1228.17 Reserved.

1228.18 Reserved.

1228.19 PHARMACEUTICAL SERVICE SPACE. *Pharmaceutical service space shall comply with the provisions of Section 1224.19.*

1228.20 DIETETIC SERVICE SPACE. *Refer to Section 1224.20, Dietetic Service Space for requirements, as modified below:*

1228.20.1 Dining area. *Provide dining space(s) for ambulatory patients, staff and visitors. Provide patient dining room(s) of 20 square feet (1.86 m^2) per patient bed separate from staff dining. These spaces shall be separate from the food preparation and distribution areas.*

SUPPORT SERVICES.

1228.21 ADMINISTRATIVE SPACE. *Refer to Section 1224.21.*

1228.22 CENTRAL STERILE SUPPLY. *Refer to Section 1224.22.*

1228.23 STORAGE.

1228.23.1 General storage. *Psychiatric hospitals shall provide general storage space of at least 10 square feet (0.93 m^2) per bed in addition to specialized storage spaces. All storage spaces shall be located within the hospital building and shall be readily accessible to the connecting corridor required under Section 1224.4.7.5.*

1228.23.2 Specialized storage. *Specialized storage spaces shall include the following:*

1228.23.2.1 Linen. *Provide separate and enclosed facilities for clean and soiled linen in each nursing unit. The clean linen storage space shall have a minimum area of 10 square feet (0.93 m^2) and may be within the clean utility room. The soiled linen collection space shall have an area of no less than 10 square feet (0.93 m^2), except where linen chutes are provided, and may be within the soiled utility room.*

1228.23.2.2 Supply. *One supply storage space having a minimum area of 15 square feet (1.39 m^2) shall be provided in each nursing unit. Supply storage may be within the clean utility room used only as part of a system for distributing clean and sterile supplies.*

1228.23.2.3 Wheelchairs. *A room or space shall be provided in each nursing unit for wheelchairs. Wheelchair storage areas may be located within the nursing unit or outside but readily accessible to the unit. The wheelchair space shall have a minimum area of 15 square feet (1.39 m^2).*

1228.23.2.4 *Sterile and unsterile supplies shall be stored separately.*

1228.23.2.5 *Food storage shall be as described in Section 1224.20.*

1228.23.3 Patient storage facilities. *A staff-controlled secured storage area shall be provided for patient's effects that are determined to be potentially harmful (e.g., razors, nail files, cigarette lighters).*

1228.24 MORGUE.

1228.24.1 *Acute-care Psychiatric Hospitals with a licensed bed capacity of 50 to 199 shall provide a morgue with autopsy facilities.*

Exception: *This may not be required if it can be demonstrated to the licensing agency that morgue and autopsy facilities are available locally.*

1228.24.2 *Acute-care Psychiatric Hospitals with a licensed bed capacity of 200 or more shall provide a morgue with autopsy facilities.*

1228.24.3 Minimum requirements. *Refer to Section 1224.24.3.*

1228.25 EMPLOYEE DRESSING ROOMS AND LOCKERS. *Refer to Section 1224.25.*

1228.26 HOUSEKEEPING ROOMS. *Refer to Section 1224.26.*

1228.27 LAUNDRY. *Refer to Section 1224.27.*

SUPPLEMENTAL SERVICES.

1228.28 ELECTROCONVULSIVE THERAPY SERVICE SPACE. *If electroconvulsive therapy (ECT) is provided in the facility, the requirements in Section 1224.28.6 shall be met.*

1228.29 Reserved.

1228.30 PEDIATRIC AND ADOLESCENT PSYCHIATRIC SERVICE SPACE. *Pediatric and adolescent psychiatric service space patient areas shall be separate from each other and shall be separate from adult psychiatric service space patient areas. Common areas including activity areas, dining area, outdoor area and space for an educational program may be shared and used by pediatric and adolescent patients at different times. The requirements of Section 1228.14, Psychiatric Nursing Service Space shall apply to pediatric and adolescent units as amended below:*

1228.30.1 Patient bedroom.

1228.30.1.1 Capacity. *Maximum bedroom capacity shall be four patients.*

1228.30.1.2 Space requirements. *Patient bedroom areas (with beds or cribs) shall meet the following requirements:*

1. *For single-bed rooms, a minimum clear floor area of 100 square feet (9.29 m^2).*
2. *For multiple-bed rooms, a minimum clear floor area of 80 square feet (7.43 m^2) per bed and 60 square feet (5.57 m^2) minimum clear floor area per crib.*

1228.30.2 Patient toilet room.

1. *Each patient shall have access to a toilet room, either from the patient room or from the corridor outside the patient room.*

2. *Where access is provided via a corridor, the following requirements shall be met:*
   2.1. *The toilet room shall be located in the nursing unit.*
   2.2. *The toilet room shall be located no more than 150 feet (45.72 m) from the bedroom.*

1228.30.3 Activity areas. *The pediatric and adolescent activities space may be centralized for common use by multiple pediatric and adolescent psychiatric units or may be located in each individual unit, in response to the Patient Safety Risk Assessment. Centralized activity areas shall be readily accessible without traversing adult patient areas.*

1228.30.3.1 Space requirements.

1. *The combined area for activity space shall have 35 square feet (3.25 m^2) of clear floor area per patient bed.*
2. *A separate dining space shall be provided and shall have a minimum of 15 square feet (1.39 m^2) of clear floor area per patient bed.*

1228.30.3.2 Outdoor areas. *Pediatric and adolescent outdoor areas shall be separate from adult outdoor areas. Refer to Section 1228.13.1.2.*

1228.30.4 Support areas for the pediatric and adolescent psychiatric unit. *Storage space shall be provided for toys, equipment, extra cribs and beds and cots or recliners for parents who may stay overnight.*

1228.30.5 Education. *If a unit treats children of school age over a period of one month or more, it shall provide physical facilities for an educational program, such as classrooms and an office for the teacher.*

1228.31 FORENSIC PSYCHIATRIC UNIT. *Where provided, a forensic psychiatric unit shall be separate and distinct from other patient areas. The requirements of Section 1228.14, Psychiatric Nursing Service Space shall apply to forensic units as amended below:*

1228.31.1 Sally port. *Forensic units shall have security vestibules or sally ports at the unit entrance. For "secure treatment facilities," alternate designs for locked unit access without individual sally ports, may be approved by the enforcement agency when it can be demonstrated that the alternate design meets performance requirements, without compromising any health or life-safety requirement.*

1228.31.2 Pediatrics and adolescents. *Forensic unit areas for pediatrics and adolescents shall be separated from adult areas. Refer to Section 1228.30.*

1228.31.3 Space requirements. *Specialized program requirements may result in additional treatment areas, police and courtroom space, and security considerations. When a forensic unit is provided, the needs of the patient population and special requirements shall be specifically addressed in the Patient Safety Risk Assessment.*

1228.32 Reserved.

1228.33 Reserved.

1228.34 Reserved.

1228.35 Reserved.

1228.36 Reserved.

1228.37 Reserved.

1228.38 INTERMEDIATE-CARE SERVICE SPACE. *Where provided, an intermediate-care service unit shall be housed in a separate and distinct nursing unit and shall comply with the applicable requirements of Section 1225 and the general construction provisions of Section 1228.4.*

1228.39 OUTPATIENT SERVICE SPACE. *Where provided, outpatient service space shall comply with the applicable requirements of Section 1224.39 and the general construction provisions of Section 1228.4.*

1228.40 SKILLED NURSING SERVICE SPACE. *Where provided, the skilled nursing service unit shall be housed in a separate and distinct nursing unit and shall comply with the applicable requirements of Section 1225 and the general construction provisions of Section 1228.4.*

1228.41 Reserved.

1228.42 CLINICAL LABORATORY SERVICE SPACE. *Where provided, clinical laboratory service space shall comply with the requirements of Section 1224.17, Clinical Laboratory Service Space.*

1228.43 RADIOLOGICAL SERVICE SPACE. *Where provided, Radiology/Imaging Service Space shall comply with the requirements of Section 1224.18, Radiological/Imaging Service Space and the general construction provisions of Section 1228.4.*

1228.44 CHEMICAL DEPENDENCY RECOVERY HOSPITAL. *Pursuant to Health and Safety Code Section 1250.3, acute psychiatric hospitals may provide chemical dependency recovery services in a distinct part. If provided, the chemical dependency recovery hospital, unit or services shall comply with Section 1229.*

SECTION 1229 [OSHPD 6]—CHEMICAL DEPENDENCY RECOVERY HOSPITALS

1229.1 Scope. *The provisions of this section shall apply to chemical dependency recovery hospitals licensed under California Health and Safety Code Section 1250.3. General acute care hospitals and acute psychiatric hospitals licensed under Health and Safety Code Section 1250 may provide chemical dependency services as a supplemental service located within a distinct part as a separate unit.*

1229.1.1 Distinct part. *Beds in a general acute care hospital, or acute psychiatric hospital, classified as chemical dependency recovery beds shall be within a distinct part. "Distinct part" means an identifiable unit of a hospital or a freestanding facility*

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accommodating beds, and related services, including, but not limited to, contiguous rooms, a wing, a floor, or a building that is approved by the California Department of Public Health for a specific purpose.

1229.2 Application. *New buildings and additions, alterations, or repairs to existing buildings shall comply with applicable provisions of the California Electrical Code, California Mechanical Code, California Plumbing Code, California Energy Code, California Fire Code (Parts 3, 4, 5, 6 and 9 of Title 24) and this section.*

Note: *Refer to the applicable exceptions under Section 1224.2.*

1229.2.1 Functional program. *General acute care hospitals and acute psychiatric hospitals providing chemical dependency recovery services as a supplemental service on their hospital license shall include a Patient Safety Risk Assessment as defined in California Administrative Code Section 7-119.*

1229.3 Definitions. *The definitions provided under Section 1224.3 apply to this section except as modified below:*

BASIC SERVICES. *Basic services mean those essential services required by law for licensure as a chemical dependency recovery hospital, including medical, nursing, rehabilitative, pharmaceutical, dietary and support services.*

CHEMICAL DEPENDENCY RECOVERY HOSPITAL. *Chemical dependency recovery hospital means a health facility that provides 24-hour inpatient chemical dependency recovery services for persons who have a dependency on alcohol or other drugs, or both alcohol and other drugs.*

HOSPITAL. *Hospital, where used in this section, means a chemical dependency recovery hospital, unless noted otherwise as a general acute care hospital or acute psychiatric hospital.*

1229.4 General construction. *Chemical dependency recovery units provided in general acute care hospitals shall comply with the provisions under Section 1224.4, General Construction, and chemical dependency recovery units provided in acute psychiatric hospitals shall comply with the provisions under Section 1228.4, General Construction, where applicable. Chemical dependency recovery hospitals under H&SC Section 1250.3 shall comply with the following requirements:*

1229.4.1 Reserved.

1229.4.2 Reserved.

1229.4.3 Reserved.

1229.4.4 Support areas for patients.

1229.4.4.1 Examination and treatment rooms.

1229.4.4.1.1 Examination room. *Examination rooms in chemical dependency recovery units shall meet the requirements of Section 1224.4.4.1.1 as amended below:*

1229.4.4.1.1.1 Location. *Examination rooms shall be permitted to serve several chemical dependency units and shall be permitted to be on a different floor.*

1229.4.4.1.1.2 Space requirements. *Examination rooms shall have a minimum clear floor area of 80 square feet (11.15 m^2).*

1229.4.4.1.2 Treatment room. *Where provided, refer to Section 1224.4.4.1.2.*

1229.4.5 Outpatient waiting rooms. *Where provided, refer to Section 1224.4.5.*

1229.4.6 Reserved.

1229.4.7 Corridors. *Refer to Section 1224.4.7. Minimum width of corridors and hallways shall be 5 feet (1524 mm); refer to restrictions under Section 435.*

Exceptions:

1. *Chemical dependency recovery units provided as distinct part units of a General Acute-Care Hospital must provide a minimum width of 8 feet subject to exemptions under Section 1224.4.7.*
2. *Chemical dependency recovery units provided as distinct part units of an Acute Psychiatric Hospital must provide a minimum width of 6 feet subject to exemptions under Section 1224.4.7.*

1229.4.8 Doors and door openings. *Refer to Section 1224.4.8.*

1229.4.9 Windows and screens.

1. *A minimum net glazed area of not less than 8 percent of the floor area of each indoor activity space and dining space shall be provided.*

1229.4.10 Ceiling heights. *Refer to Section 1224.4.10.*

1229.4.11 Interior finishes. *Interior finishes shall comply with Section 1224.4.11.*

1229.4.12 Noise control. *Refer to Section 1224.4.19.*

1229.5 Communication system. *Refer to Section 1224.5.*

BASIC SERVICES.

1229.6 Reserved.

1229.7 Reserved.

1229.8 Patient counseling.

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1229.8.1 *Patient counseling shall include space to conduct an interview or series of interviews with the patient to address the needs identified in the patient's recovery plan. Also refer to Section 1229.14.7.*

1229.9 Group therapy.

1229.9.1 *Service area(s) shall be provided for sessions conducted by the professional staff designed to promote the interaction of the individuals within the session for the purpose of alleviating, or changing, personal and/or family situations, attitudes and beliefs which present a threat to the recovery or stability of the patient or the family. Refer to Sections 1229.13 and 1229.14.9.*

1229.10 Physical conditioning.

1229.10.1 *Service area(s) shall be provided for patients' participation in an organized program of physical activities designed to improve the patient's wellbeing and as defined in the patient's individual recovery plan. See Section 1229.13.*

1229.11 Family therapy.

1229.11.1 *Family therapy shall include space(s) for individual counseling, group counseling, conjoint counseling and/or other appropriate activities provided for consenting family members and/or consenting significant others. Also refer to Section 1229.14.7.*

1229.12 Outpatient services.

1229.12.1 *Outpatient services means outreach programs, intervention, after care services, individual or group service and any other service provided for persons who are outpatients in the chemical dependency recovery unit.*

1229.13 Chemical dependency recovery activity areas. *The activity areas may be centralized for common use or may be located in each residential unit. The following areas are required in support of the chemical dependency recovery group therapy and physical conditioning basic services:*

1229.13.1 Patient care areas.

1229.13.1.1 Indoor activity rooms.

1. *At least two separate activity rooms, one appropriate for group recreation and one for quiet activities to serve as a patient lounge, shall be provided.*
2. *Space requirements. The combined area of these rooms shall have a minimum of 25 square feet (2.32 m^2) per patient bed, with at least 120 square feet (11.15 m^2) of clear floor area for each of the two spaces.*

1229.13.1.2 Outdoor activity area. *If provided, an outdoor activity area shall be sized to meet the appropriate needs of the occupants and maintain egress.*

1229.14 Chemical dependency recovery residential areas. *Resident areas within chemical dependency hospital shall comply with the requirements of Sections 1202, 1203, 1204, 1205, 1206, 1207, 1209 and 1211 and the requirements of this section. Distinct part units within a General Acute Care Hospital shall comply with the requirements in Section 1224.14. Distinct part units within an Acute Psychiatric Hospital shall comply with the requirements in Section 1228.14.*

1229.14.1 Patient rooms. *Each patient bedroom shall meet the following standards:*

1229.14.1.1 Capacity. *Maximum room capacity shall be two patients.*

1229.14.1.2 Space requirements. *Patient bedrooms shall have a minimum clear floor area of 100 square feet (10.2 m^2) for single-bed rooms and 80 square feet (7.43 m^2) per bed for multiple-bed rooms.*

1229.14.1.3 Windows. *Each patient bedroom shall have a window in accordance with Section 1229.4.9.*

1229.14.1.4 Reserved.

1229.14.1.5 Outside exposure. Refer to Section 1224.14.1.5.

1229.14.1.6 Reserved.

1229.14.1.7 Patient toilet room.

1. *Each patient shall have access to a toilet room without having to enter a corridor.*

   Exception: *Corridor access to the patient toilet room shall be permitted at adolescent patient bedrooms and in specific patient bedrooms where the use of corridor access is part of the hospital's written Patient Safety Risk Assessment and management program.*
2. *One toilet room shall serve no more than two patient bedrooms and no more than four patients.*
3. *The toilet room shall contain a toilet and a handwashing station.*

1229.14.1.8 Bathroom facilities. *Showers shall be provided at a ratio of 1:20 patients, and for each major fraction thereof.*

1229.14.1.9 Patient storage. *Each patient room shall include a separate wardrobe, locker or closet for storing clothing and personal effects.*

1229.14.2 Service areas. *Provision for the services listed below shall be in or immediately accessible to each chemical dependency recovery unit. The size and location of each service area will depend upon the numbers and types of beds served. Identifiable spaces are required for each of the indicated functions. If a service area is specifically permitted to serve more than one nursing unit, there shall be at least one such service area located on each nursing unit floor.*

1229.14.2.1 Administrative center(s) or nurse station(s). *Refer to Section 1224.4.4.2. A separate charting area with provisions for acoustic and patient file privacy shall be provided.*

1229.14.2.2 Office(s) for staff. *Office(s) for staff shall be provided.*

PATIENT CARE SUPPORT AREAS.

1229.14.3 Visitor/consultation room(s). *Service support space shall be provided for Patient Counseling and Family Therapy Basic Services. Visitor/consultation rooms shall be provided at a room-to-bed ratio of one consultation room for each 12 beds, or major fraction thereof with a minimum of one, in each residential unit. Additionally, the following requirements shall be met:*

1. *Visitor/consultation room(s) shall have a minimum clear floor area of 100 square feet (9.29 m^2).*
2. *The room(s) shall be designed for acoustical and visual privacy. Refer to Table 1224.4.19, Sound Transmission Limitations in Hospitals.*

1229.14.4 Conference room. *A conference and treatment planning room shall be provided for use by the chemical dependency recovery unit.*

1229.14.5 Space for group therapy. *Service support space shall be provided for Group Therapy Basic Services. An enclosed private space with a minimum clear floor area of at least 225 square feet (20.90 m^2) shall be available for group therapy activities.*

1229.15 Reserved.

1229.16 Reserved.

1229.17 Reserved.

1229.18 Reserved.

1229.19 Pharmaceutical service space. *Pharmaceutical service space shall comply with the provisions of Section 1224.19.1.2.1.*

1229.19.1 Shared services. *Chemical Dependency Recovery units provided as Distinct Parts of General Acute Care Hospitals or Acute Psychiatric Hospitals may share pharmaceutical service space provided under Section 1224.19.*

1229.20 Dietetic service space. *Refer to Section 1224.20, Dietetic Service Space for requirements, as modified below:*

1229.20.1 Dining area. *Provide dining space(s) for ambulatory patients, staff and visitors. Provide patient dining room(s) of 20 square feet (1.86 m^2) per patient bed separate from staff dining. These spaces shall be separate from the food preparation and distribution areas.*

1229.20.2 Multi-use dining room. *If minimum space requirements are met for dining, the dining area may serve as required group therapy room and/or as one of two required indoor activity spaces when not be used for dining.*

1229.20.3 Shared services. *Chemical Dependency Recovery units provided as Distinct Parts of General Acute Care Hospitals or Acute Psychiatric Hospitals may share dietetic service space provided under Section 1224.20.*

SUPPORT SERVICES.

1229.21 Administrative space. *Refer to Section 1224.21.*

1229.22 Reserved.

1229.23 Storage.

1229.23.1 General storage. *Provide general storage space of at least 10 square feet (0.93 m^2) per bed in addition to specialized storage spaces. All storage spaces shall be located within the hospital building.*

1229.23.2 Specialized storage. *Specialized storage spaces shall include the following:*

1229.23.2.1 Linen. *Provide separate and enclosed facilities for clean and soiled linen in each residential unit. The clean linen storage space shall have a minimum area of 10 square feet (0.93 m^2). The soiled linen collection space shall have a minimum area of 10 square feet (0.93 m^2), except where linen chutes are provided.*

1229.23.2.2 Supply. *One supply storage space having a minimum area of 15 square feet (1.39 m^2) shall be provided in each residential unit.*

1229.23.2.3 Reserved.

1229.23.2.4 Reserved.

1229.23.2.5. *Food storage shall be as described in Section 1224.20.*

1229.23.3 Patient storage facilities. *A staff-controlled secured storage area shall be provided for patients' effects that are determined to be potentially harmful (e.g., razors, nail files, cigarette lighters).*

1229.25 Employee lockers. *Provide an area for staff lockers.*

1229.26 Housekeeping rooms. *Refer to Section 1224.26.*

1229.27 Laundry. *Refer to Section 1224.27.*

OPTIONAL SERVICES.

1229.28 Reserved.

1229.29 Reserved.

1229.30 Adolescent chemical dependency service space. *Adolescent service space patient areas shall be separate and distinct from adult service space patient areas. The requirements of Section 1229.14 shall apply to adolescent units as amended below:*

1229.30.1 Patient bedroom.

1229.30.1.1 Capacity. *Maximum bedroom capacity shall be two patients.*

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1229.30.1.2 Space requirements. *Patient bedroom areas shall meet the following requirements:*

1. *For single-bed rooms, a minimum clear floor area of 100 square feet (9.29 m^2).*
2. *For multiple-bed rooms, a minimum clear floor area of 80 square feet (7.43 m^2) per bed.*

1229.30.2 Patient toilet room.

1. *Each patient shall have access to a toilet room, either from the patient room or from the corridor outside the patient room.*
2. *Where access is provided via a corridor, the following requirements shall be met:*
   - *2.1. The toilet room shall be located in the unit.*
   - *2.2. The toilet room shall be located no more than 150 feet (45.72 m) from the bedroom.*

1229.30.3 Bathroom facilities. *Showers shall be provided at a ratio of 1:20 patients, and for each major fraction thereof.*

1229.30.4 Activity areas. *The adolescent activities space may be centralized for common use by multiple adolescent units or may be located in each individual unit. Centralized activity areas shall be readily accessible without traversing adult patient areas.*

1229.30.4.1 Space requirements.

1. *The combined area for activity space shall have 35 square feet (3.25 m^2) of clear floor area per patient bed.*
2. *A separate dining space shall be provided and shall have a minimum of 15 square feet (1.39 m^2) of clear floor area per patient bed.*

1229.30.4.2 Outdoor areas. *Adolescent outdoor areas shall be separate from adult outdoor areas. Refer to Section 1229.13.1.2.*

1229.30.5 Support areas for the adolescent unit. *Storage space shall be provided for equipment, extra beds and cots or recliners for parents who may stay overnight.*

1229.30.6 Education. *If a unit treats children of school age over a period of one month or more, it shall provide physical facilities for an educational program, such as classrooms and an office for the teacher.*

> ***1229.31 Other chemical dependency service space.*** *Any other service space(s) not addressed in Section 1229 shall comply with the applicable provisions in Section 1224 or 1228. These services shall have prior approval from the California Department of Public Health.*

SECTION 1230 [BSCC]—MINIMUM STANDARDS FOR JUVENILE FACILITIES

1230.1 Design criteria for required spaces.

1230.1.1 Reception/intake admission. *In each juvenile hall, space used for the reception of youth pending admission to juvenile hall shall have the following space and equipment:*

1. *Weapons lockers as specified in Section 1230.2.9;*
2. *A secure room for the confinement of youth pending admission to juvenile hall as specified in Section 1230.1.2;*

   In each juvenile hall, camp and ranch, space used for the reception of youth pending admission to these facilities shall have the following space and equipment:
3. *Access to a shower;*
4. *A secure vault or storage space for youth, valuables;*
5. *Telephones accessible to youth; and*
6. *Access to hot and cold running water for staff use.*

1230.1.2 Locked holding room. *A locked holding room shall:*

1. *Contain a minimum of 15 square feet (1.4 m^2) of floor area per youth;*
2. *Provide no less than 45 square feet (4.2 m^2) of floor space and have a clear ceiling height of 8 feet (2438 mm) or more;*
3. *Contain seating to accommodate all youth as specified in Section 1230.2.8;*
4. *Be equipped with a toilet, wash basin, mirror and drinking fountain as specified in Section 1230.2, unless a procedure is in effect to give the youth access to a toilet, wash basin, mirror and drinking fountain;*
5. *Maximize visual supervision of youth by staff; and*
6. *Have an outward swinging or lateral sliding door.*

1230.1.3 Natural light. *Outer-facing exterior windows where youth's privacy is not at risk shall be provided in locked sleeping rooms, single occupancy sleeping rooms, double occupancy sleeping rooms, dormitories and day rooms. Natural light may be provided by, but is not limited to, skylights or windows in dayrooms, windows in adjacent exterior exercise areas, and in sleeping rooms and/or dormitories.*

1230.1.4 Corridors. *Corridors in living units shall be at least 8 feet (2438 mm) wide.*

1230.1.5 Living unit. *A living unit shall be a self-contained unit containing locked sleeping rooms, single and double occupancy sleeping rooms or dormitories, dayroom space, toilet, wash basins, drinking fountains and showers commensurate to the number of youth housed. A living unit shall not be divided in a way that hinders direct access, supervision, immediate intervention or other action if needed. In juvenile halls, the number of youth housed in a living unit shall not exceed 30.*

1230.1.6 Locked sleeping rooms. *Locked sleeping rooms shall be equipped with an individual or combination toilet, wash basin, mirror and drinking fountain. Doors to locked sleeping rooms shall swing outward or slide laterally.*

1230.1.7 Single occupancy sleeping rooms. *Single occupancy sleeping rooms shall provide the following:*

1. *A minimum of 70 square feet (1.78 m^2) of floor area;*
2. *A minimum clear ceiling height of 8 feet (2438 mm); and*
3. *The door into this room shall swing outward or slide laterally and be provided with a view panel, a minimum of 144 square inches (92,903 mm^2), constructed of security glazing.*
4. *Contain a bed as specified in 1230.2.5.*

1230.1.8 Double occupancy sleeping rooms. *Double occupancy sleeping rooms shall provide the following:*

1. *A minimum of 100 square feet (9.3 m^2) of floor area;*
2. *A minimum clear ceiling height of 8 feet (2438 mm) and a minimum width of 7 feet (2134 mm); and*
3. *The door into this room shall swing outward or slide laterally and be provided with a view panel, a minimum of 144 square inches (92,903 mm^2), constructed of security glazing.*
4. *Contain beds as specified in 1230.2.5.*

1230.1.9 Dormitories. *Dormitories shall provide the following:*

1. *A minimum of 50 square feet (4.6 m^2) of floor area per youth with the minimum size of a dormitory being 200 square feet (18.6 m^2) of floor area and a minimum 8-foot (2438 mm) clear ceiling height;*
2. *Designed for no fewer than four youth;*
3. *Dormitories in juvenile halls shall be designed for no more than 30 youth;*
4. *Camps shall conform to Items 1 and 2.*

1230.1.10 Dayrooms. *Dayrooms shall contain 35 square feet (3.3 m^2) of floor area per youth, and contain tables and seating to accommodate the maximum numbers of youth allowed access at a given time. Access must be provided to toilets, wash basins, drinking fountains and showers as specified in Section 1230.2.*

1230.1.11 Physical activity and recreation areas. *Indoor/outdoor physical activity and recreation areas shall be designed as follows:*

1. | ***Facility capacity*** | ***Minimum indoor outdoor recreation space*** |
   |---|---|
   | *40 or less* | *9,000 square feet (836 m^2)* |
   | *41 to 274* | *225 square feet (21 m^2) per youth up to 61,650 square feet (5727 m^2)* |
   | *275 or more* | *61,650 square feet (5727 m^2), plus 145 square feet (13.47 m^2) for each youth beyond 274 [up to a maximum of 87,120 square feet (8093 m^2)]* |

   1.1. *At least one quarter of the dedicated indoor/outdoor space shall be a paved or like surface.*

   1.2. *The required recreation area shall contain no single dimension less than 40 feet (12.2 m).*
2. *A portion of the dedicated space for physical activity and recreation shall be out-of-doors and be of sufficient size and equipped in such a manner to allow compliance with Title 15, Section 1371, which requires at least one hour per day of outdoor activity for each detained youth.*
3. *Lighting of outdoor recreation areas shall be provided to allow for evening activities and to provide security.*
4. *Access must be provided to a toilet, wash basin and drinking fountain as specified in Section 1230.2.*

1230.1.12 Academic classrooms. *There shall be dedicated classroom space for every juvenile in every facility. The primary purpose for the academic classroom shall be for education. Each academic classroom shall contain a minimum of 160 square feet (14.9 m^2) of floor space for the teachers' desk and work area and a minimum of 28 square feet (2.6 m^2) of floor space per minor. A communication system shall be provided in each classroom to allow for immediate response to emergencies. The classroom shall be designed for a maximum of 20 minors. There shall be space available in every juvenile facility that may be used for specialized, one-on-one or small group educational purposes.*

1230.1.13 Safety room. *A safety room shall:*

1. *Contain a minimum of 48 square feet (4.5 m^2) of floor area and a minimum clear ceiling height of 8 feet (2438 mm);*
2. *Be limited to one youth;*
3. *Be padded as specified in Section 1230.2.7;*
4. *Provide one or more vertical view panels constructed of security glazing. These view panels shall be no more than 4 inches (102 mm) wide nor less than 24 inches (610 mm) long, which shall provide a view of the entire room;*
5. *Provide an audio monitoring system as specified in Section 1230.1.22;*
6. *Contain a flushing ring toilet, capable of accepting solid waste, mounted flush with the floor, the controls for which must be located outside of the room;*
7. *Be equipped with a variable intensity, security-type lighting fixture with controls located outside the room;*
8. *Any wall or ceiling-mounted devices must be designed to prohibit access to the youth occupant; and*
9. *Provide a food pass with lockable shutter, no more than 4 inches (102 mm) high, and located between 26 inches (660 mm) and 32 inches (813 mm) as measured from the bottom of the food pass to the floor.*

1230.1.14 Medical examination room. *There must be a minimum of one suitably equipped medical examination room in every juvenile facility. Medical examination rooms shall provide the following:*

1. *Space for carrying out routine medical examinations and emergency care and used for no other purpose;*
2. *Privacy for youth;*
3. *Lockable storage space for medical supplies;*
4. *Not less than 144 square feet (13.4 m^2) of floor space with no single dimension less than 7 feet (2134 mm);*
5. *Hot and cold running water;*
6. *Smooth, nonporous, washable surfaces;*
7. *A medical exam table; and*
8. *Adequate lighting.*

1230.1.15 Pharmaceutical storage. *Provide lockable storage space for medical supplies and pharmaceutical preparations as specified by Title 15, Section 1438.*

1230.1.16 Dining areas. *Dining areas in juvenile facilities shall contain a minimum of 15 square feet (1.4 m^2) of floor space and sufficient tables and seating for each person being fed. Persons being fed include youth, staff and visitors. Dining areas shall not contain toilets or showers in the same room without appropriate visual barrier.*

1230.1.17 Visiting space. *Space shall be provided in all juvenile facilities for in-person visiting which shall be unobstructed by barriers such as, but not limited to, security glazing or mesh.*

1230.1.18 Institutional storage. *One or more storage rooms shall be provided to accommodate a minimum of 80 cubic feet (2.3 m^3) of storage space per minor. Items to be stored shall be institutional clothing, bedding, supplies and activity equipment.*

1230.1.19 Personal storage. *Each youth in a juvenile facility shall be provided with a minimum of 9 cubic feet (0.25 m^3) of secure storage space for personal clothing and belongings.*

1230.1.20 Safety equipment storage. *In all juvenile facilities, a secure area shall be provided for the storage of safety equipment, such as fire extinguishers, self-contained breathing apparatus, wire and bar cutters, emergency lights, etc.*

1230.1.21 Janitorial closet. *In all juvenile facilities, at least one securely lockable janitorial closet, containing a mop sink and sufficient area for the storage of cleaning implements, must be provided within the security area of the facility.*

1230.1.22 Audio monitoring system. *In safety rooms, locked holding rooms, locked sleeping rooms, single and double occupancy rooms and dormitories, there must be an audio monitoring system capable of actuation by the minor that alerts personnel.*

1230.1.23 Emergency power. *There shall be a source of emergency power in all juvenile facilities capable of providing minimal lighting in all living units, activities areas, corridors, stairs and central control points, and to maintain fire and life safety, security, communications and alarm systems (Title 24, Part 2, Chapter 27). Such an emergency power source shall conform to the requirements specified in Title, 24, Part 3, Article 700, California Electrical Code, California Code of Regulations.*

1230.1.24 Confidential interview room. *Confidential interview rooms shall contain a minimum of 60 square feet (5.6 m^2) of floor area. In juvenile halls there shall be a minimum of one suitably furnished interview room for each 30 youth. In camps there shall be a minimum of one suitably furnished interview room for each facility. This interview room shall provide for confidential consultations with youth.*

1230.1.25 Special-purpose juvenile halls. *Special-purpose juvenile halls shall conform to all minimum standards for juvenile facilities contained in this section with the following exceptions:*

1. *Physical activity and recreation areas as specified in Section 1230.1.11;*
2. *Academic classrooms as specified in Section 1230.1.12;*
3. *Medical examination room as specified in Section 1230.1.14; and*
4. *Dining areas as specified in Section 1230.1.16.*

1230.1.26 Court holding room for youth. *A court holding room shall:*

1. *Contain a minimum of 10 square feet (0.93 m^2) of floor area per youth;*
2. *Be limited to no more than 16 youth;*
3. *Provide no less than 40 square feet (3.7 m^2) of floor area and have clear ceiling height of 8 feet (2438 mm) or more;*
4. *Contain seating to accommodate all youth as specified in Section 1230.2.8;*
5. *Contain a toilet, wash basin and drinking fountain as specified in Section 1230.2;*
6. *Maximize visual supervision of youth by staff; and*
7. *A mirror of a material appropriate to the level of security shall be provided as specified in Section 1230.2.11.*

1230.1.27 Program and activity areas. *All juvenile facilities shall include adequate space for specific programs in addition to recreation and exercise areas.*

1230.2 Design criteria for furnishings and equipment.

1230.2.1 Toilet/urinals. *All toilet areas shall provide privacy for the youth and help reduce the risk of voyeurism without mitigating staff's ability to supervise. Toilets must be available in a ratio to youth as follows:*

1. *Juvenile halls 1:6;*
2. *Camps 1:10; and*
3. *Locked holding rooms 1:8:*

One toilet and one urinal may be substituted for every 15 males.

1230.2.2 Wash basins. *In living units, wash basins must be available in a ratio to youth as follows:*

1. *Juvenile halls 1:6;*
2. *Camps 1:10; and*
3. *Locked holding rooms 1:8:*

Wash basins must be provided with hot and cold or tempered water.

1230.2.3 Drinking fountains. *In living areas and indoor and outdoor recreation areas, drinking fountains must be accessible to youth and to staff.*

1. *The drinking fountain bubbler shall be on an angle which prevents waste water from flowing over the drinking bubbler; and*
2. *The water flow shall be actuated by a mechanical means.*

1230.2.4 Showers. *Shower areas shall provide privacy for the youth and help reduce the risk of voyeurism without mitigating staff's ability to supervise. Showers shall be available to all youth on a ratio of at least one shower or bathtub to every six youth. Showers shall be provided with tempered water.*

1230.2.5 Beds. *Beds shall be at least 30 inches (762 mm) wide and 76 inches (1930 mm) long and be of the solid bottom type. Beds shall be at least 12 inches (305 mm) off the floor and spaced no less than 36 inches (914 mm) apart. Bunk beds must have no less than 33 inches vertically between the solid bottoms. In secure facilities, the bunks shall be securely anchored and flushed against the floor and/or wall.*

1230.2.6 Lighting. *Lighting in locked sleeping rooms, single occupancy rooms, double occupancy rooms, dormitories, day rooms and activity areas shall provide not less than 20 footcandles (216 lux) of illumination at desk level. Night lighting is required in these areas to provide good visibility for supervision and be conducive to sleep.*

1230.2.7 Padding. *In safety rooms, padding shall cover the entire floor, door, walls and everything on the walls to a clear height of 8 feet (2438 mm). Benches or platforms are not to be placed on the floor of this room.*

All padded rooms must be equipped with a tamper-resistant fire sprinkler as approved by the State Fire Marshal. All padding must be:

1. *Approved for use by the State Fire Marshal;*
2. *Nonporous to facilitate cleaning;*
3. *At least $^{1}/_{2}$ inch (12.7 mm) thick;*
4. *Of a unitary or laminated construction to prevent its destruction by teeth, hand tearing or small metal objects;*
5. *Firmly bonded to all padded surfaces to prevent tearing or ripping; and*
6. *Without any exposed seams susceptible to tearing or ripping.*

1230.2.8 Seating. *Seating shall be designed to the level of security. When bench seating is used, 18 inches (457 mm) of bench is seating for one person.*

1230.2.9 Weapons lockers. *Weapons lockers are required in all secure juvenile facilities and shall be located outside the secure area of the facility. Weapons lockers shall be equipped with individual compartments, each with an individual locking device.*

1230.2.10 Security glazing. *Security glazing shall comply with the minimum requirements of one of the following test standards: American Society for Testing and Materials, ASTM F1233-98, Class III glass, or; California Department of Corrections and Rehabilitation, CDCR 860-94d, Appendix H, Class C glass or; H.P. White Laboratory, Inc., HPW-TP-0500.02, Forced Entry Level III.*

1230.2.11 Mirrors. *A mirror of a material appropriate to the level of security must be provided near each wash basin specified in these regulations.*

TABLE 1230A—REQUIRED SPACES AND EQUIPMENT IN JUVENILE FACILITIES				
SECTION NUMBERS	REGULATION	HALLS	CAMPS	SPJH
1230.1.1	Reception/intake admission	X		
1230.1.2	Locked holding rooms	X	X[1]	
1230.1.3	Natural light	X	X	X
1230.1.4	Corridors	X[1]	X[1]	X[1]
1230.1.5	Living units	X		
1230.1.6	Locked sleeping rooms	X[1]	X[1]	X[1]
1230.1.7	Single occupancy sleeping rooms	X[1]	X[1]	X[1]
1230.1.8	Double occupancy sleeping rooms	X[1]	X[1]	X[1]
1230.1.9	Dormitories	X[1]	X[1]	X[1]
1230.1.10	Day rooms	X	X	X
1230.1.11	Physical activity and recreation areas	X	X	
1230.1.12	Academic classrooms	X	X	
1230.1.13	Safety rooms	X[1]		
1230.1.14	Medical examination rooms	X	X	
1230.1.15	Pharmaceutical storage	X	X	X
1230.1.16	Dining areas	X	X	
1230.1.17	Visiting space	X	X	X
1230.1.18	Institutional storage	X	X	X
1230.1.19	Personal storage	X	X	X
1230.1.20	Safety equipment storage	X	X	X
1230.1.21	Janitorial closet	X	X	X
1230.1.22	Audio monitoring system	X	X	X
1230.1.23	Emergency power	X	X	X
1230.1.24	Confidential interview rooms	X	X	X
1230.1.25	Special-purpose juvenile halls	X		
1230.1.26	Court holding rooms for youth*	X[1]		
1230.2.1	Toilets/urinals	X	X	X
1230.2.2	Wash basins	X	X	X
1230.2.3	Drinking fountains	X	X	X
1230.2.4	Showers	X	X	X
1230.2.5	Beds	X	X	X
1230.2.6	Lighting	X	X	X
1230.2.7	Padding	X[1]		
1230.2.8	Seating	X	X	X
1230.2.9	Weapons lockers	X	X[1]	X
1230.2.10	Security glazing	X	X[1]	X[1]
1230.2.11	Mirrors	X	X	X

Key:
Halls = Juvenile halls.
Camps= Camps, ranches, forestry camps or boot camps.
SPJH= Special-purpose juvenile halls.
** = For youth in jail, youth in temporary custody in a law enforcement facility and youth in court holding facilities, see Sections 1520, 1540 and 1560 of Title 15, respectively.*
X = Regulation is applicable for all juvenile facilities.
X[1] = Regulation is applicable for halls, camps and special-purpose juvenile halls dependent on operational characteristics of the facility.

INTERNATIONAL CODE COUNCIL®

SECTION 1231 [BSCC]—LOCAL DETENTION

1231.1 Definitions.

BOARD OF STATE & COMMUNITY CORRECTIONS *means the Board of State & Community Corrections, which acts by and through its executive officer, deputy directors and field representatives.*

LIVING AREAS *means those areas of a facility utilized for the day-to-day housing and activities of incarcerated persons. These areas do not include special-use cells such as sobering, safety and holding or staging cells normally located in receiving areas.*

LOCAL DETENTION FACILITY *is any city, county, city and county or regional jail, camp, court holding facility or other correctional facility, whether publicly or privately operated, and court holding facility used for the confinement of adults or of both adults and minors, but does not include that portion of a facility for the confinement of both adults and minors which is devoted only to the confinement of minors. The types of local detention facilities are as follows:*

Court holding facility *means a local detention facility constructed within a court building after January 1, 1978, used for the confinement of persons solely for the purpose of a court appearance for a period not to exceed 12 hours.*

Temporary holding facility *means a local detention facility constructed after January 1, 1978, used for the confinement of persons for 24 hours or less pending release, transfer to another facility or appearance in court.*

Type I facility *means a local detention facility used for the detention of persons usually pending arraignment for not more than 96 hours, excluding holidays, after booking. Such a Type I facility may also detain persons on court order either for their own safe-keeping or those committed to a city jail or may house people sentenced to the county jail provided such placement in the facility is made on a voluntary basis on the part of the person incarcerated. As used in this section, an incarcerated worker is defined as a person assigned to perform designated tasks outside of their cell or dormitory, pursuant to the written policy of the facility, for a minimum of four hours each day on a five-day scheduled work week.*

TYPE II FACILITY *means a local detention facility used for the detention of persons pending arraignment, after arraignment, during trial and upon a sentence of commitment.*

TYPE III FACILITY *means a local detention facility used only for the detention of convicted and sentenced persons.*

TYPE IV FACILITY *means a local detention facility or portion thereof designated for housing under Penal Code Section 1208 for work/education furlough or other programs involving access into the community.*

RATED CAPACITY *means the number of incarcerated occupants for which a facility's single and double occupancy cells or dormitories, except those dedicated for health care or disciplinary separation housing, were planned and designed in conformity to the standards and requirements contained herein and in Title 15, C.C.R.*

1231.2 Design criteria for required spaces.

1231.2.1 Reception and booking. *Facilities where booking and housing occur shall have the following space and equipment:*

1. *Weapons locker as specified in Section 1231.3.12.*
2. *A holding cell or room for the confinement of incarcerated persons pending their booking, complying with Section 1231.2.2.*
3. *A sobering cell as described in Section 1231.2.4 if intoxicated, incarcerated persons who may pose a danger to themselves or others are held. Except for temporary holding facilities, those facilities that accept male and female intoxicated persons two sobering cells shall be provided.*
4. *Access to a shower within the secure portion of the facility.*
5. *Provide access to a secure vault or storage space for valuables belonging to incarcerated people.*
6. *A safety cell or cells as described in Section 1231.2.5 if the program statement identifies the need for such a cell.*
7. *Telephones which are accessible to the inmates.*
8. *Unobstructed access to hot and cold running water for staff use.*

1231.2.2 Temporary holding cell or room. *A temporary holding cell or room shall:*

1. *Contain a minimum of 10 square feet (0.93 m^2) of floor area per incarcerated person;*
2. *Be limited to no more than 16 incarcerated people;*
3. *Be no smaller than 40 square feet (3.7 m^2) and have a clear ceiling height of 8 feet (2438 mm) or more;*
4. *Contain seating to accommodate all incarcerated people as required in Section 1231.3;*
5. *Contain a toilet, wash basin and drinking fountain as specified in Section 1231.3;*
6. *Maximize visual supervision of incarcerated people by staff; and*
7. *When located in a temporary holding facility, the cell or room shall be equipped with a bunk if incarcerated people are to be held longer than 12 hours.*

1231.2.3 Temporary staging cell or room. *A temporary staging cell or room shall:*

1. *Be constructed for the purpose of holding incarcerated people who have been classified and separated in accordance with Sections 1050 and 1053 of Title 15, Division 1, California Code of Regulations.*
2. *Be limited to holding incarcerated people up to four hours.*
3. *Be limited to no more than 80 incarcerated people.*
4. *Contain a minimum of 10 square feet (0.93 m^2) of floor area per incarcerated person and a clear ceiling height of 8 feet (2438 mm) or more.*

5. *Be no smaller than 160 square feet (14.9 m^2).*
6. *Contain seating to accommodate all incarcerated people as required in Section 1231.3.*
7. *Contain toilet, wash basin and drinking fountain as specified in Section 1231.3.*
8. *Maximize visual supervision of incarcerated people by staff.*

1231.2.4 Sobering cell. *A sobering cell shall:*

1. *Contain a minimum of 20 square feet (1.9 m^2) of floor area per incarcerated person;*
2. *Be limited to eight incarcerated people;*
3. *Be no smaller than 60 square feet (5.6 m^2) and have a clear ceiling height of 8 feet (2438 mm) or more;*
4. *Contain a toilet, wash basin and drinking fountain as specified in Section 1231.3;*
5. *Have padded partitions located next to toilet fixture in such a manner that they provide support to the user;*
6. *Maximize visual supervision of incarcerated people by staff;*
7. *Be padded on the floor as specified in Section 1231.3; and*
8. *Have accessible a shower in the secure portion of the facility.*

1231.2.5 Safety cell. *A safety cell shall:*

1. *Contain a minimum of 48 square feet (4.5 m^2) of floor area with no one floor dimension being less than 6 feet (1829 mm) and a clear ceiling height of 8 feet (2438 mm) or more;*
2. *Be limited to one incarcerated person;*
3. *Contain a flushing ring toilet, capable of accepting solid waste, mounted flush with the floor, the controls for which must be located outside of the cell;*
4. *Be padded as specified in Section 1231.3;*
5. *Be equipped with a variable intensity, security-type lighting fixture which is inaccessible to the occupant, control of which is located outside of the cell;*
6. *Provide one or more vertical view panels not more than 4 inches (102 mm) wide nor less than 24 inches (610 mm) long which shall provide a view of the entire room;*
7. *Provide a food pass with lockable shutter, no more than 4 inches (102 mm) high, and located between 26 inches (660 mm) and 32 inches (813 mm) as measured from the bottom of the food pass to the floor; and*
8. *Any wall or ceiling mounted devices must be inaccessible to the occupant.*

1231.2.6 Single-occupancy cells. *Single-occupancy cells shall:*

1. *Have a maximum capacity of one incarcerated person;*
2. *Contain a minimum of 60 square feet (5.6 m^2) of floor area in Type I facilities and 70 square feet (6.5 m^2) of floor area in Type II and Type III facilities;*
3. *Have a minimum clear ceiling height of 8 feet (2438 mm) and a minimum width of 6 feet (1829 mm);*
4. *Contain a toilet, wash basin and drinking fountain as specified in Section 1231.3; and*
5. *Contain a bunk, desk and seat as specified in Section 1231.3.*

   Exception: *A Type I facility does not require a desk and seat.*

1231.2.7 Double-occupancy cells. *Double-occupancy cells shall:*

1. *Have a maximum capacity of two incarcerated people;*
2. *Contain a minimum of 60 square feet (5.6 m^2) of floor area in Type I facilities and 70 square feet (6.5 m^2) of floor area in Type II and Type III facilities;*
3. *Have a minimum clear ceiling height of 8 feet (2438 mm) and a minimum width of 6 feet (1829 mm);*
4. *Contain a toilet, wash basin and drinking fountain as specified in Section 1231.3; and*
5. *Contain two bunks, and at least one desk and seat as specified in Section 1231.3.*

   Exception: *A Type I facility does not require a desk and seat.*

1231.2.8 Dormitories. *Dormitories shall:*

1. *Contain a minimum of 50 square feet (4.7 m^2) of floor area per incarcerated person for a single bunk fixture; a minimum of 70 square feet (7 m^2) for a double bunk fixture; and a minimum of 90 square feet (9.3 m^2) for triple bunk fixture and have a minimum ceiling height of 8 feet (2438 mm);*
2. *Be designed for no more than 64 incarcerated people and no fewer than four incarcerated people;*
3. *Provide access to water closets separate from the wash basin and drinking fountains as specified in Section 1231.3; and*
4. *In other than Type I facilities, provide storage space for personal items and clothing for each occupant.*

1231.2.9 Dayrooms.

Dayrooms or dayroom space shall:

1. *Contain 35 square feet (3.3 m^2) of floor area per incarcerated person in width in front of cells/rooms;*
2. *Contain tables and seating to accommodate the maximum number of incarcerated people;*

3. *Provide access to water closets, wash basins and drinking fountains as specified in Section 1231.3;*
4. *Provide access to a shower or showers as specified in Section 1231.3; and*
5. *Be provided to all incarcerated people in Type II and Type III facilities (except those housed in special-use cells) and to incarcerated workers in Type I facilities. Dayroom space as described in this section may be a part of a single occupancy cell used for administrative separation or a dormitory, in which case the floor area of the cell or a dormitory must be increased by the square footage required for the dayroom.*

1231.2.10 Exercise area. *An outdoor exercise area or areas must be provided in every Type II and Type III facility. The exercise area shall accommodate the ability for large muscle activities, be equipped with a place for rest, and provide:*

1. *Natural light and access to fresh air;*
2. *Security and supervision appropriate to the level of custody;*
3. *At least one exercise area of not less than 600 square feet (55.7 m^2);*
4. *Minimum clear height must be 15 feet (4572 mm);*
5. *Lighting to allow for evening activities;*
6. *Free access to a toilet, wash basin, and drinking fountain as provided in Section 1231.3;*
7. *Access for people with disabilities; and*
8. *Minimum number of square feet of surface area will be computed by multiplying 80 percent of maximum rated population by 50 square feet (4.7 m^2) and dividing the result by the number of one-hour exercise periods per day.*

Type IV facilities shall have an outdoor recreation area or access to community recreation facilities.

1231.2.11 Correctional program/multipurpose space. *An area for correctional programming must be provided in every Type II and Type III facility. The program area and furnishings shall be designed to meet the needs specified by the facility's program statement.*

Type IV facilities shall have multipurpose space for games and activities, dining, visiting, TV meetings and quiet space for study and reading, such that activities do not conflict with each other.

1231.2.12 Medical examination room. *There must be a minimum of one suitably equipped medical examination room in every facility which provides on-site health care. The examination room shall be designed in consultation with the responsible physician/health authority. Such a medical examination room shall:*

1. *Be located within the security area and provide for privacy of the incarcerated person;*
2. *Provide not less than 100 square feet (9.3 m^2) of floor space with no single dimension less than 7 feet (2134 mm);*
3. *Provide hot and cold running water;*
4. *Provide lockable storage for medical supplies;*
5. *Provide an examination table;*
6. *Provide adequate lighting; and*
7. *Any room where medical procedures are provided must be equipped with hot and cold running water*

1231.2.13 Pharmaceutical storage space. *Provide lockable storage space for medical supplies and pharmaceutical preparations as referenced by Title 15, California Code of Regulations, Section 1216.*

1231.2.14 Medical care housing. *There shall be some means to provide medical care and housing of ill and infirm incarcerated people. When the program statement for a Type II or Type III facility indicates that medical care housing is needed, such housing must provide lockable storage space for medical instruments and must be located within the security area of the facility accessible to all incarcerated people, but not in the living area of either. The medical care housing unit shall be designed in consultation with the health authority. Medical/mental health areas may contain other than single occupancy cells.*

If negative pressure rooms are being planned, they shall be designed to recognized industry standards.

1231.2.15 Reserved.

1231.2.16 Commissary. *In all Type II, III and IV facilities, except where community access is available, there shall be provisions made for incarcerated people to purchase items (such as candy, toilet articles, stationery supplies, books, newspapers and magazines, etc.). An area shall be provided for the secure storage of the stock for such canteen items unless the stock is removed from the facility by an external vendor during times when commissary items are not available for sale.*

1231.2.17 Dining facilities. *In all Type II, III and IV facilities which serve meals, dining areas shall be provided which will allow groups of incarcerated people to dine together. Such dining areas shall not contain toilets, wash basins or showers in the same room without appropriate visual barrier. Wherever the facility contains a central dining room or rooms, it shall contain a minimum of 15 square feet (1.4 m^2) of floor space and sufficient tables and seating for each incarcerated person being fed.*

1231.2.18 Visiting space. *Space shall be provided in all Types I, II, III and IV facilities for in-person visiting.*

1231.2.19 Safety equipment storage. *A secure area shall be provided for the storage of safety equipment such as fire extinguishers, self-contained breathing apparatus, wire and barcutters, emergency lights, etc.*

1231.2.20 Janitors' closet. *In Type II facilities, at least one securely lockable janitors' closet with sufficient area for the storage of cleaning implements and supplies must be provided within the security areas of the facility. A mop sink shall also be available within the security area of the facility. In court holding, temporary holding, Types I, III and IV facilities, the closet need not be in the security area.*

1231.2.21 Storage rooms. *One or more storage rooms shall be provided to accommodate a minimum of 80 cubic feet (2.3 m^3) of storage area per incarcerated person for clothing and personal property, institutional clothing, bedding and supplies. Court holding, temporary holding and Type I facilities may be excluded from the storage space requirement for personal and institutional clothing unless clothing is issued.*

1231.2.22 Audio monitoring system. *In court holding, temporary holding, Type I, Type II and Type III facilities there shall be an occupant-actuated or sound-actuated audio monitoring system in temporary holding cells or rooms, temporary staging cells or rooms, sobering cells, safety cells, single and double occupancy cells, dormitories, dayrooms, exercise areas, dining rooms and correctional program/multipurpose space, which is capable of alerting personnel who can respond immediately.*

1231.2.23 Laundry facilities. *In Type IV facilities, provision shall be made for washing and drying personal clothing by machines, either in the facility or in the community, if access is permitted for same.*

1231.2.24 Emergency power. *There shall be a source of emergency power in all detention facilities capable of providing minimal lighting in all housing units, activities areas, corridors, stairs and central control points, and to maintain fire and life safety, security, communications and alarm systems. Such an emergency power source shall conform to the requirements specified in Title 24, Part 3, Article 700, California Electrical Code, California Code of Regulations.*

1231.2.25 Confidential interview rooms. *There must be a minimum of one suitably furnished interview room for confidential interviews in every facility which provides on-site health care. The interview room shall be designed in consultation with responsible custodial staff and health care staff. Such an interview room shall:*

1. *Be located within the security area accessible to all incarcerated persons; and*
2. *Provide not less than 70 square feet (6.5 m^2) of floor space with no single dimension less than 6 feet (1829 mm).*

1231.2.26 Attorney interview space. *All facilities except Type IV facilities shall include attorney interview areas which provide for confidential consultation with incarcerated persons.*

Exception: *The design of court holding and temporary holding facilities shall include the following required spaces from Sections 1231.2.2, 1231.2.19, 1231.2.20, 1231.2.21, 1231.2.22, 1231.2.24 and 1231.2.26.*

1231.3 Design criteria for furnishings and equipment. *Furnishings and equipment shall be as follows:*

1231.3.1 Toilets/urinals.

1. *Toilets/urinals must be provided in single-occupancy cells and double-occupancy cells.*
2. *In dormitories, toilets/urinals must be provided in a ratio to incarcerated people of 1:10.*
3. *Toilets/urinals must be accessible to the occupants of day-rooms and exercise areas.*
4. *In temporary holding cells and temporary staging cells toilets/urinals must be provided in a ratio to incarcerated people of 1:16.*
5. *In sobering cells toilets/urinals must be provided in a ratio to incarcerated people of 1:8.*
6. *One urinal or 2 feet (610 mm) of urinal trough may be substituted for each toilet up to one third of the total number of toilets required, except in those facilities or portions thereof used for females.*
7. *Toilet areas shall provide modesty for incarcerated people with staff being able to visually supervise.*

1231.3.2 Wash basins.

1. *Wash basins must be provided in single occupancy cells and double occupancy cells.*
2. *In dormitories, wash basins must be provided in a ratio to incarcerated people of 1:10.*
3. *Wash basins must be accessible to the occupants of day-rooms and exercise areas.*
4. *In temporary holding cells and temporary staging cells, wash basins must be provided in a ratio to incarcerated people of 1:16.*
5. *In sobering cells, wash basins must be provided in a ratio to incarcerated people of 1:8.*
6. *Wash basins must be provided with hot and cold or tempered water.*
7. *Two feet (610 mm) of wash basin trough may be substituted for each basin required.*

1231.3.3 Drinking fountains. *There must be a minimum of one drinking fountain in every single-occupancy cell, double-occupancy cell, dormitory, temporary holding cell, temporary staging cell, sobering cell, and be accessible to the occupants of day rooms and exercise areas. Additional drinking fountains shall be located in other areas of the facility so that drinking water will be available to incarcerated people and staff. Such drinking fountains must meet the following minimum health requirements:*

1. *The drinking fountain bubbler shall be on an angle which prevents waste water from flowing over the drinking fountain bubbler.*
2. *Water flow shall be actuated by mechanical means.*

1231.3.4 *Showers must be available to all incarcerated people on a ratio of at least one shower to every 20 incarcerated people or fraction thereof and must provide hot and cold water or tempered water. Shower stalls/shower areas must be designed and constructed of materials which are impervious to water and soap so they may be easily cleaned. Shower areas shall provide modesty for incarcerated people with staff being able to visually supervise.*

1231.3.5 *Beds must be elevated off the floor, have a solid bottom or pan with no perforations, and a sleeping surface of at least 30 inches (762 mm) wide and 76 inches (1930 mm) long. Bunk beds must have a minimum of 21 inches (533 mm) between bed pans.*

Except in minimum security areas, beds must be securely fastened to the floor or the wall in a manner to prevent creating a ligature point of attachment between the bed and the wall, i.e., ensuring that there is no space between the bed and the wall.

1231.3.6 Lighting. *Lighting in housing units, dayrooms and activity areas must be sufficient to permit easy reading by a person with normal vision, and shall not be less than 20 footcandles (215.2 lux) at desk level and in the grooming area. Lighting shall be centrally controlled and occupant controlled in housing cells or rooms where appropriate. Night lighting in these areas shall be sufficient to give good visibility for purposes of supervision. In minimum-security areas, lighting may be supplied by ordinary lighting fixtures, and in areas of higher security, light fixtures must be of secure design.*

1231.3.7 Windows. *In housing areas of higher than minimum security, exterior windows which are constantly accessible to incarcerated people for escape must be designed and constructed so that if broken out, the net area accessible for escape is no greater than 5 inches (127 mm) in one dimension.*

1231.3.8 Cell padding. *In sobering cells, the floor and partition shall be padded. In safety cells, padding must cover the entire floor, doors and walls and everything on them to a clear height of 8 feet (2438 mm).*

All such padded cells must be equipped with a tamper-resistant fire sprinkler as approved by the State Fire Marshal. All padding must be:

1. *Approved for use by the State Fire Marshal;*
2. *Nonporous to facilitate cleaning;*
3. *At least $^1/_2$-inch (12.7 mm) thick;*
4. *Of a unitary or laminated construction to prevent its destruction by teeth, hand tearing or small metal objects;*
5. *Firmly bonded to all padded surfaces to prevent tearing or ripping; and*
6. *Without any exposed seams susceptible to tearing or ripping.*

1231.3.9 Mirrors. *A mirror of a material appropriate to the level of security must be provided near each wash basin specified in these regulations.*

1231.3.10 Seating. *In temporary holding and temporary staging cells, seating must be securely fixed to the floor or wall. When bench seating is used, 18 inches (457 mm) of bench width and no less than 12 inches depth is seating for one person.*

1231.3.11 Desk/seat. *In single and double occupancy cells, a desk and seat for the purpose of writing and dining shall be provided.*

Exception: *A Type I facility does not require a desk and a seat.*

1231.3.12 Weapons locker. *A secure weapons locker shall be located outside the security perimeter of the facility. Such weapons lockers shall be equipped with individual compartments, each with an individual locking device. Weapons lockers are required in temporary and court holding facilities and in all facilities of higher than minimum security.*

Exception: *The design of court holding and temporary holding facilities shall include the design criteria for furnishings and equipment from Sections 1231.3.1, 1231.3.2, 1231.3.3, 1231.3.6, 1231.3.10 and 1231.3.12.*

1231.4 Enclosure of vertical openings. *Elevator shafts, vent shafts and other vertical openings shall be enclosed, and the enclosure shall be as set forth in Chapter 7.*

1231.5 Fire-extinguishing systems. *Automatic fire-extinguishing systems, standpipes and basement pipe inlets shall be installed when and as required by Chapter 9.*

1231.6 Existing Group I occupancies. *Existing buildings housing existing protective social-care homes or facilities established prior to the effective date of these regulations may have their use continued if they conform, or are made to conform, to the following provisions.*

1231.6.1 Use of floors. *The use of floor levels in buildings of Type III, IV or V nonfire-rated construction may be as follows:*

Nonambulatory—first floor only;

Ambulatory—not higher than the third-floor level, provided walls and partitions are constructed of materials equal in fire- resistive quality to that of wood lath and plaster in good repair and all walls are firestopped at each floor level.

1231.6.2 Enclosure of exits and vertical openings. *Except for two-story structures housing ambulatory guests, all interior stairs shall be enclosed in accordance with Chapter 10. In lieu of stairway enclosures, floor separations or smoke barriers may be provided in such a manner that fire and smoke will not spread rapidly to floors above or otherwise impair exit facilities. In these instances, floor separations or smoke barriers shall have a fire resistance equal to not less than $^1/_2$-inch (12.7 mm) gypsum wall board on each side of wood studs with openings protected by not less than a $1^3/_4$-inch (44 mm) solid bonded wood-core door of the self-closing type. All other vertical openings shall be enclosed in accordance with the provisions of Chapter 7.*

1231.6.3 Exit access. *Each floor or portion thereof of buildings used for the housing of existing protective social-care homes or facilities shall have access to not less than two exits in such a manner as to furnish egress from the building or structure in the event of an emergency substantially equivalent to the provisions of Chapter 10.*

1231.6.4 Corridor openings. *Openings from rooms to interior corridors shall be protected by not less than $1^3/_4$-inch (44 mm) solid-bonded wood-core doors. Transoms and other similar openings shall be sealed with materials equivalent to existing corridor wall construction.*

1231.6.5 *Interior wall and ceiling finishes shall conform to the requirements for a Group R, Division 1 occupancy as specified in Chapter 8.*

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1231.6.6 *Automatic sprinkler systems shall be installed in existing protective social-care occupancies in accordance with the provisions of Chapter 9.*

1231.6.7 *Fire alarm systems. Automatic fire alarm systems shall be installed in existing protective social-care homes or facilities in accordance with the provisions of Chapter 9.*

Exception: *When an approved automatic sprinkler system conforming to Chapter 9 is installed, a separate fire alarm system as specified in this subsection need not be provided.*

TABLE 1231A—REQUIRED SPACES AND EQUIPMENT IN JUVENILE FACILITIES

	TYPE I	TYPE II	TYPE III	TYPE IV	COURT HOLDING	TEMPORARY HOLDING
Reception/booking	x	x	*	*		*
Temporary holding cells or room	x	x	*	*	x	x
Detoxification cell	*	x				
Safety cell	*	*				
Single-occupancy cell	x	x	*			
Dormitories	*	x	x	x		
Day room	*	x	x			
Exercise area		x	x	x[1]		
Shower area/delousing room	x	x				*
Program/multipurpose space		x	x	x		
Medical exam room[2]		x	x			
Pharmaceutical storage space	x	x	x	x		*
Medical care housing		*	*			
Hair care space		x	x			
Commissary[3]			x	x[3]		
Dining facility[4]	*	x	x	*		
Visiting space	x	x	x	x		
Attorney interview rooms	x	x	x		x	x
Confidential interview rooms		x	*			
Safety equipment storage	x	x[2]	x	x	x	x
Janitor closet	x	x	x	x	x	x
Storage rooms	x	x[5]	x	x	x	x
Audio/video-monitoring systems	x	x	x[6]	*	x	x
Laundry facility		x		x[7]		
Fire-detection alarm system	x	x	x	x	x	x
Emergency	x	x	x	x	x	x

x - Required.
* - Required when program statement identifies need.
1. Not required if community recreation facilities are available.
2. Not required if the incarcerated population is less than 25.
3. Not required if community access is available.
4. Not required if meals are served in day room.
5. Must be securely lockable and located within the security area.
6. Required in areas housing incarcerated persons of higher than minimum security.
7. Not required if community access is permitted.

SECTION 1232—RESERVED

SECTION 1233—RESERVED

SECTION 1234—RESERVED

SECTION 1235 [DPH]—SANITARY CONTROL OF SHELLFISH (PLANTS AND OPERATIONS)

1235.1 Culling plants. *Culling plants shall be located in areas free from unsanitary conditions and faulty sewage disposal. They shall be provided with an ample supply of water under adequate pressure from a source approved by the Department of Health Services for the purpose of hosing down floor and benches and cleaning the shellfish. Floors and premises shall be kept in a clean and sanitary condition.*

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1235.2 Plant arrangement. *Unless shellfish are shucked directly into packing containers with no further processing, the shucking and packing processes shall be done in separate rooms. There shall be installed in the partition between the two rooms a delivery window through which the shucked stock is passed to the packing room. Provision shall be made for storing the employees' outer garments, aprons, gloves, etc., in a separate room.*

Note: *In special instances where shucking is done on a small scale for local retail sales, shucking and packing may be permitted in a single room if approved by the Department of Health Services. This single room and all operations shall conform to all requirements of these regulations except that of separate shucking and packing rooms. "Limited" certificates shall be issued in these instances and all containers of shucked shellfish shall be clearly labeled or marked with words "Limited Certificate" and the appropriate certificate number.*

1235.3 Floors. *The floors of all rooms in which shellfish are stored, shucked, washed, packed or otherwise processed shall be constructed of concrete or other equally impervious material, graded to drain quickly, free from cracks or uneven surfaces that might interfere with proper cleaning or drainage, and maintained in clean and satisfactory condition.*

1235.4 Walls and ceilings. *Walls and ceilings shall be maintained in a smooth, clean, washable, light-colored conditions. They shall be impervious to moisture and shall be kept in good repair. Walls contiguous to benches shall, to a height of 2 feet (610 mm) above the bench top, be of smooth concrete, metal or equally nonabsorbent material.*

1235.5 Screening. *The plant shall have all openings effectively screened, unless other effective means are provided to prevent the entrance of flies and other insects.*

1235.6 Light. *Ample light to work by shall be provided in all working rooms. A light intensity of not less than 10 footcandles (108 lux) shall be maintained on all working surfaces when workers are at their working positions.*

1235.7 Ventilation. *Adequate ventilation shall be provided to prevent condensation on ceilings or other surfaces.*

1235.8 Toilet facilities. *Every shellfish culling, shucking, packing or repacking plant shall be provided with clean and adequate toilet facilities conveniently located. No toilet room shall be used for the storage of garments, food products, containers or equipment. Construction and maintenance of toilets shall comply with all local and state regulations.*

1235.9 Handwashing facilities. *An adequate number of lavatories shall be provided at locations convenient to toilet rooms and shellfish handling operations, including running hot and cold water, soap and individual disposal towels. The use of a common towel is prohibited. All employees shall wash their hands thoroughly with running water and soap on beginning work and after each visit to the toilet. Signs to this effect shall be posted in conspicuous places in the plant and in the toilet rooms.*

1235.10 Sewers and drains. *Sewage and other liquid wastes shall be discharged into public sewers wherever possible. Where private sewage or waste disposal systems must be utilized, they shall be constructed in accordance with state and local regulations pertaining thereto. Plant waste systems shall be properly trapped and vented. Waste liquids shall be disposed of in a manner that will not adversely affect the quality of the water in which shellfish are grown or stored. Waste lines from washing machines shall have suitable protection against the possibility of sewage or wastes entering these machines.*

1235.11 Water supply. *Shucking, packing or repacking plants shall be provided with an ample supply of water under adequate pressure from a source approved by the Department of Health Services. The supply shall be accessible to all parts of the plant, adequate in quantity, and of a safe sanitary quality. No cross connections with unapproved supplies or other possible sources of contamination shall be permitted.*

SECTION 1236 [DPH]—LABORATORY ANIMAL QUARTERS

Laboratory animal quarters shall meet the requirements of Part 12 California Referenced Standards Code, Chapter 12-4A, Section 12-4A-101.

See the 2010 Edition, Title 24, Part 12, Chapter 12-4A.

SECTION 1237 [DPH]—WILD ANIMAL QUARANTINE FACILITIES

1237.1 Scope. *The provisions of this section are intended to provide standards for the quarantine of wild animals.*

1237.2 Definitions. *For the purpose of this chapter, the following terms shall have the meaning indicated:*

ESCAPEPROOF *is a condition that will prohibit unintended release of wild animals from their quarantine enclosure.*

HOUSING FACILITY *is a room, building or area used to contain a primary enclosure or enclosures for animal quarantine.*

PRIMARY ENCLOSURE *is a structure used to immediately restrict an animal or animals to a limited amount of space, such as a room, pen, run, cage or compartment within the quarantine facility.*

QUARANTINE FACILITY *is a facility for the quarantine confinement of imported wild animals.*

SPACE CONDITIONING *is the regulation of ambient temperature.*

1237.3 Construction.

1237.3.1 General. *Housing facilities used for quarantine shall be constructed in accordance with these provisions and Group B occupancy requirements.*

1237.3.2 Entry. *Quarantine housing facilities shall restrict the entry of other animals and unauthorized persons by locking or bolting devices or other equipment methods.*

Rooms containing primary enclosures shall be entered through double doors that maintain a minimum distance of 4 feet (1219 mm) between doors permitting closure of one door before the second is opened.

All animals must be visible through a viewpoint from the entry area.

Windows to the outside shall be escapeproof.

One handwashing sink shall be provided in each room in which animals are quarantined.

1237.3.3 Special provision. *The interior building surfaces of housing facilities shall be smooth and impervious to moisture.*

1237.4 Light and ventilation. *All portions of the wild animal quarantine facility shall be space conditioned to maintain the health of the wild animals. Ventilation shall be provided in housing facilities so as not to create a health hazard by one or more of the following methods.*

1. *Openable windows*
2. *Doors*
3. *Vents*
4. *Air conditioning*
5. *Fans*

Uniformly distributed illumination of not less than 50 footcandles (538 lux) at least the level of the cage racks shall be provided.

1237.5 Primary enclosure. *Primary enclosures shall be capable of containing quarantined animals and excluding access by other animals. Enclosures shall provide space to allow each animal to make normal postural adjustments with freedom of movement and maintain social activity. Primates shall be provided with a minimum floor space equal to an area of at least three times the area occupied by such primates when standing on four feet.*

SECTION 1238—RESERVED

SECTION 1239—RESERVED

SECTION 1240 [AGR]—MEAT AND POULTRY PROCESSING PLANTS

1240.1 General construction. *The buildings shall be of sound construction and kept in good repair.*

1240.1.1 *The doors, windows, skylights and other outside openings of the plant, shall be protected by fitted screens or other devices, such as air screens, against the entrance of flies and other insects.*

1240.1.2 *Outside doors shall be hung so as to be close fitting when closed.*

1240.1.3 *Rooms or compartments used for edible products shall be separated and distinct from inedible products departments and from rooms where live poultry are held or slaughtered. Separate rooms shall be provided when required for conducting processing operations in a sanitary manner; and all rooms shall be able to accommodate equipment for processing operations.*

Note: *In the event of specific conflict, in federally inspected plants, between the provisions of Title 24 and federal regulations, the federal regulations shall take precedence.*

1240.1.4 *The rooms and compartments in which any product is prepared or handled shall be free from objectionable odors.*

1240.1.5 *The outer premises of every official establishment, including docks and areas where cars and vehicles are loaded, and the driveways, approaches, yards, pens and alleys shall be paved.*

1240.2 Refuse rooms. *A separate refuse room shall be required in official establishments where accumulations of refuse occur. Refuse rooms shall be entirely separate from other rooms in the establishment, and shall provide for the following:*

1. *Tight fitting doors.*
2. *Ventilation.*
3. *Drainage.*
4. *Cleanup facilities.*
5. *Floors and walls to a height of 6 feet (1829 mm) above the floor shall be impervious to moisture.*
6. *Wall above 6 feet (1829 mm), and ceilings shall be moisture resistant.*

1240.3 Rooms for holding carcasses for further inspection. *Room or other acceptable facilities in which carcasses or parts thereof are held for further inspection shall be in such numbers and such locations as needs of the inspection in the establishment may require. These rooms or facilities shall be equipped with hasps for locking.*

1240.4 Coolers and freezers. *Coolers and freezers shall be of adequate size and capacity and have cooling capability to fully enable compliance with the regulations governing the inspection of meat and poultry and meat and poultry products.*

1240.5 Boiler room. *The boiler room shall be a separate room where necessary to prevent dirt and objectionable odors entering from it into any room where dressed poultry or poultry products are prepared, handled or stored.*

1240.6 Inspector's office. *Office space for the use of government personnel shall be provided. The room or space must meet the approval of the inspection service and provide for the following:*

1. *Light*

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2. Heat
3. Ventilation
4. Desk space
5. File cabinets

1240.7 Facilities for program employees. *Establishments shall have facilities for program employees.*

1240.8 Lunch rooms. *Lunch rooms or lunch areas separate from the processing, packing or supply rooms shall be provided in establishments where employees eat their lunches.*

1240.9 Floors. *All floors in rooms where exposed products are prepared or handled shall be constructed of, or finished with, materials impervious to moisture. The floors in killing, ice cooling, ice packing, eviscerating, cooking, boning and cannery rooms shall be graded for complete runoff with no standing water.*

1240.10 Walls, posts, partitions and doors. *All walls, posts, partitions and doors in rooms where exposed products are prepared or handled shall be smooth and constructed of materials impervious to moisture to a height of at least 8 feet (2438 mm) above the floor. All surfaces above this height must be smooth and finished with moisture-resistant material.*

1240.11 Ceilings. *Ceilings must be moisture resistant in rooms where exposed products are prepared or handled, finished and sealed.*

1240.12 Rails. *Rails should be located and passageway space provided so that exposed product does not come in contact with posts, walls and other fixed parts of the building or with barrels, boxes or other containers trafficked through holding and operation areas.*

1240.13 Lighting. *There shall be either natural or artificial light or both for all rooms and compartments.*

1240.13.1 *All rooms in which poultry or livestock are killed, eviscerated or otherwise processed shall have at least 30 foot-candles (323 lux) of light intensity on all working surfaces.*

Exceptions:

1. *At the inspection stations such light intensity shall be at least 50 footcandles (538 lux).*
2. *In all other rooms in which poultry or livestock are not killed, eviscerated or otherwise processed, there shall be provided at least 5 footcandles (54 lux) of light intensity when measured at a distance of 30 inches (762 mm) from the floor.*

1240.14 Ventilation. *There shall be either natural or artificial ventilation, adequate to control odors, vapors and condensation to the extent necessary to prevent adulteration of product and the creation of insanitary conditions, in all rooms and compartments.*

1240.14.1 *Freezing rooms, other than those for plate freezers or liquid freezing, shall have forced-air circulation, and freezers and coolers shall be equipped with floor racks or pallets unless other means are used which will assure that products will be maintained in a wholesome condition.*

1240.14.2 *Toilet rooms shall be ventilated to the outside of the building.*

1240.15 Lavatories, toilets and other sanitary facilities.

1240.15.1 *Lavatory and toilet accommodations, including but not limited to, running hot and cold water, shall be provided as follows in Table 1240.15.1.*

TABLE 1240.15.1

PERSONS OF SAME SEX	TOILET BOWLS REQUIRED
1 to 15, inclusive	1
1 to 15, inclusive	2
1 to 15, inclusive	3*
1 to 15, inclusive	4*
For each additional 30 persons in excess of 80	1*

* Urinals may be substituted for toilet bowls, but only to the extent of one-third of the total number of bowls stated.

1240.15.2 *Lavatories shall be in or adjacent to toilet and locker rooms and at other places in the plant to provide for the cleanliness of all personnel handling products.*

1240.15.3 *Toilet rooms opening directly into rooms where products are exposed shall have self-closing doors.*

1240.15.4 *Dressing rooms and toilet rooms shall be provided in each establishment and shall be ample in size and readily accessible. They shall be separated from the rooms and compartments in which products are prepared, stored or handled. Where both sexes are employed, separate facilities shall be provided.*

1240.15.5 *Lockers or other facilities shall be provided for employees' wearing apparel and for the storing and changing of clothing. Lockers shall not be located in rooms where processing operations are conducted.*

1240.15.6 *Handwashing facilities serving areas where dressed livestock and poultry carcasses and parts and meat and poultry products are prepared shall be operated by other than hand-operated controls, or shall be continuous flow type that provides flow of water for washing hands.*

1240.15.7 Catch basins. *All catch basins on the premises shall accommodate the provisions of Section 1243.5.*

SECTION 1241 [AGR]—COLLECTION CENTERS AND FACILITIES

1241.1 General construction.

1241.1.1 *Collection centers shall have facilities for the storage of carcasses and parts of dead animals and the cleaning and sanitizing of vehicles.*

1241.1.2 *Buildings used for the temporary storage of animal carcasses, packinghouse wastes and other products before transportation to a licensed rendering plant shall be of sound construction and shall be of such construction as to prevent the entrance or harboring of vermin.*

1241.1.3 *The floors, walls, ceilings, partitions and doors shall be of such material, construction and finish as to make them readily cleanable.*

1241.1.4 *The area for the cleaning and sanitizing of vehicles shall be provided with adequate live steam or hot water, producing a temperature of at least 180°F (82°C), or other method for sanitizing vehicles.*

1241.1.5 *Facilities shall be provided for the holding and disposal of solid waste resulting from the cleaning operation. Such facilities shall be accessible and easily cleaned and so constructed as to prevent the entrance or harborage of vermin, flies and other insects.*

1241.1.6 *The cleaning and sanitizing of vehicles shall be done on a slab of concrete or other material approved by the Department, which is sloped to drains so as to permit the rapid runoff of water.*

1241.1.7 *Carcasses and packinghouse waste. The unloading slab shall be of sufficient size to hold all animal carcasses and packinghouse waste material, be constructed of concrete or other material approved by the Department and sloped to drains so as to permit the rapid runoff of water.*

1241.2 Floors. *Floors of rooms in which carcasses and packinghouse wastes are received or stored shall be graded to permit runoff of water with no standing water. In new construction and in renovated buildings where floors are to be resurfaced, the pitch shall not be less than $^1/_4$ inch per foot (2 percent) to drains.*

1241.3 Lavatories and toilets. *Modern lavatory accommodations, including running hot and cold water, shall be provided except where the Department determines that they are not necessary.*

SECTION 1242 [AGR]—RENDERERS

1242.1 General construction.

1242.1.1 Separation from other businesses. *Every licensed rendering establishment shall be separate and distinct from any establishments in which any meat, meat byproducts, poultry or poultry byproducts are handled and from any other business at the discretion of the Department.*

1242.1.2 *The cleaning and sanitizing of vehicles shall be done on a slab of concrete or other material approved by the Department; which is sloped to drains so as to permit the rapid runoff of water.*

SECTION 1243 [AGR]—HORSEMEAT AND PET FOOD ESTABLISHMENTS

1243.1 Scope. *In the event of specific conflict between the provisions of Title 24 and federal regulations, the federal regulations shall take precedence in establishments under federal inspection.*

1243.2 General.

1243.2.1 Facilities for program employees. *Office space, including light and heat shall be provided by official establishments for the inspector and other program employees. The office space shall be conveniently located and adequately ventilated, heated, cooled and provided with adequate desk and file space.*

1243.2.2 Final inspection places.

1243.2.2.1 *Final inspection places shall, by size, rail arrangement and other equipment, prevent contamination of edible carcasses or parts by inedible carcasses or parts.*

1243.2.2.2 Floors. *The floors shall be of such construction as to facilitate the maintenance of sanitary conditions and shall have drainage connections. When the final inspection place is part of a larger floor, it shall be separated from the rest of the floor by a curb, railing or otherwise.*

1243.2.3 Docks and receiving rooms. *Docks and receiving rooms shall be provided.*

1243.2.4 *The floors, walls, ceilings, partitions, posts, doors and other parts of all structures shall be of such material, construction and finish as will make them readily and thoroughly cleanable. The floors shall be kept watertight.*

1243.2.5 Rails. *Rails shall be located and passageway space provided, so that exposed product does not come in contact with post, walls and other fixed parts of the building or with barrels, boxes and other containers trafficked through holding and operation areas.*

1243.2.6 *The rooms and compartments used for edible products shall be separated and distinct from those used for inedible products.*

1243.2.7 *The rooms and compartments in which any product is prepared or handled shall be free from objectionable odor.*

1243.2.8 *Precaution shall be taken to exclude flies, rats, mice and other vermin from official establishments.*

1243.2.9 *The outer premises of horsemeat and pet food establishments shall meet the requirements of Section 1240.1.5.*

1243.3 Lighting. *There shall be light and ventilation for all rooms and compartments.*

1243.4 Sanitary facilities and accommodations. *Sanitary facilities and accommodations shall be furnished by every official establishment.*

1243.4.1 *Dressing rooms and toilet rooms shall be provided in each establishment and shall be ample in size and readily accessible. They shall be separated from the rooms and compartments in which products are prepared, stored or handled. Where both sexes are employed, separate facilities shall be provided.*

1243.4.2 *Lavatories, including running hot and cold water, shall be placed in or adjacent to toilet and urinal rooms and at other places in the establishment to assure cleanliness of all persons handling any product.*

1243.4.3 *Facilities shall be provided for cleansing and disinfecting utensils.*

1243.5 Catch basins. *All catch basins on the premises shall be of such construction and location to ensure they are kept clean and odorless. Catch basins shall not be located in department where any product is prepared, handled or stored.*

1243.6 Final inspection space. *Such spaces shall be equipped with hot water and a lavatory.*

SECTION 1244—RESERVED

SECTION 1245—RESERVED

SECTION 1246—RESERVED

SECTION 1247—RESERVED

SECTION 1248—RESERVED

SECTION 1249—RESERVED

SECTION 1250 [CA]—PHARMACIES

1250.1 Application. *This section applies to pharmacies listed in Section 1.4.1 regulated by the Department of Consumer Affairs.*

1250.2 Restrooms. *A pharmacy shall maintain a readily accessible restroom. The restroom shall contain a toilet and washbasin supplied with running water.*

1250.3 Sink. *All pharmacies shall be equipped with a sink within the pharmacy for pharmaceutical purposes. The sink shall be supplied with hot and cold running water.*

1250.4 Compounding area for parenteral solutions. *The pharmacy shall have a designated area for the preparation of sterile products for dispensing which shall:*

1. *In accordance with Federal Standard 209 (b), Clean Room and Work Station Requirements, Controlled Environment as approved by the Commission, Federal Supply Service, General Service Administration meet standards for Class 100 HEPA (high efficiency particulate air) filtered air such as laminar airflow hood or clean room.*
2. *Have nonporous and cleanable surfaces, ceilings and ceiling tiles, walls, floors and floor coverings.*
3. *The pharmacy shall be arranged in such a manner that the laminar-flow hood is located in an area which is exposed to minimal traffic flow, and is separate from any area used for bulk storage of items not related to the compounding of parenteral solutions.*

   There shall be sufficient space, well separated from the laminar-flow hood area for the storage of bulk materials, equipment and waste materials.
4. *A sink with hot and cold running water must be within the parenteral solution compounding area or adjacent to it.*
5. *Any pharmacy that compounds sterile injectable products from one or more nonsterile ingredients must compound the medication in one of the following environments:*
   - *5.1. An ISO class 5 laminar airflow hood within an ISO class 7 cleanroom. The cleanroom must have a positive air pressure differential relative adjacent areas.*
   - *5.2. An ISO class 5 cleanroom.*
   - *5.3. A barrier isolator that provides an ISO class 5 environment for compounding.*

Note: *For additional pharmacy mechanical standard requirements, see Chapter 5, California Mechanical Code.*

SECTION 1251 [CA]—VETERINARY PREMISES

1251.1 *Unless otherwise specified in this section, all veterinary premises shall contain the following:*

1. *Indoor lighting shall be adequate for its intended purpose. All surgical rooms shall be provided with emergency lighting with a viable power source.*
2. *A reception room and office, or a combination of the two.*
3. *An examination room separate from other areas of the veterinary premises and of sufficient size to accommodate the doctor, assistant, patient and client.*
4. *All floors, doors, table tops, countertops and window coverings shall be nonporous.*

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5. *Fire precautions shall meet the requirements of local and state fire prevention codes.*
6. *The temperature and ventilation of the veterinary premises shall be maintained so as to assure the comfort of all patients.*
7. *If animals are housed or retained for treatment, the following shall be provided:*
   - A. *Separate compartments, one for each animal, maintained in a sanitary manner so as to assure comfort.*
   - B. *Effective separation of known or suspected contagious animals.*
8. *A veterinary premises that provides aseptic surgical services shall comply with the following:*
   - A. *A room, separate and distinct from all other rooms shall be reserved for aseptic surgical procedures that require aseptic preparation. A veterinarian may perform emergency aseptic surgical procedures in another room when the room designated for aseptic surgery is occupied or temporarily unavailable.*
     1. *The California Veterinary Medical Board (Board) may exempt a fixed veterinary premises that is currently registered with the Board, but does not have a separate aseptic surgery room, where it determines that it would be a hardship for the veterinary premises to comply with the provisions of paragraph A. In determining whether a hardship exists, the Board shall give due consideration to the following factors:*
        - (i) *Zoning limitations.*
        - (ii) *Whether the premises constitutes a historical building.*
        - (iii) *Whether compliance with this requirement would compel the veterinary premises to relocate to a new location.*
   - B. *The surgery room shall not contain a functional sink with an open drain.*
   - C. *The doors into the surgery room must be able to be fully closed, fill the entire door space, be made of nonporous material and not provide access from outside the veterinary premises. In cases where the size of the animal prevents entry to a fixed veterinary premises via a regularly sized door, doors for outside access are permitted as long as such doors are able to be fully closed, fill the entire door space and be made of nonporous material.*

1251.2

(a) *An animal vaccination veterinary premises, as defined in Section 2030.3 of Article 4 of Division 20 of Title 16 of the California Code of Regulations, shall meet all minimum standards specified in Section 1251.1 except for Items 2 and 3 of that section.*

(b) *For the purposes of this section, a "large animal fixed veterinary premises" shall mean a building where veterinary services are being provided to equines or food animals and livestock, as defined in Section 4825.1 of the Business and Professions Code. A large animal fixed veterinary premises shall meet all minimum standards specified in Section 1251.1 except for Item 6 of that section.*

(c) *For the purposes of this section, "animal shelter premises" shall mean a building or portion(s) thereof where veterinary services are being provided to animals impounded by a privately or publicly operated agency or organization and does not meet the exception criteria pursuant to paragraphs (4) and (5) of subdivision (a) of Section 4827 of the Business and Professions Code. An animal shelter premises providing veterinary services solely to impounded animals shall meet all minimum standards specified in Section 1251.1 except for Items 2 and 3 of that section. This includes post-adoption veterinary services to animals adopted from the same premises within 30 days of adoption.*

SECTION 1252 [CA]—BARBER COLLEGES AND SHOPS

1252.1 Barber college floors. *Floors of barber colleges shall be covered with hardwood, linoleum, asphalt tile or some other washable and nonporous material other than paint.*

1252.2 Barber shop floors. *Floors of barber shops shall be covered with hardwood, linoleum, asphalt tile, carpeting or some other washable material other than paint.*

1252.3 Barber shop washbasin(s) and lavatory(ies). *A barber shop owner shall provide washbasin(s) or lavatory(ies) within the working area of the barber shop.*

1252.4 Minimum barber shop size. *A barber shop shall be a minimum of 8 feet (2438 mm) wide, 8 feet (2438 mm) long, with an 8-foot (2438 mm) ceiling.*

1252.5 Barber college premises. *In a college of barbering, the room for practical work and demonstrations shall be at least 14 feet (4267 mm) wide for one row of barber chairs and shall be at least 20 feet (6096 mm) wide for two rows of chairs.*

SECTION 1253 [CA]—SCHOOLS OF COSMETOLOGY, COSMETOLOGICAL ESTABLISHMENTS AND SATELLITE CLASSROOMS

1253.1 Floor space.

1253.1.1 Schools of cosmetology. *The minimum floor space in any school of cosmetology premises shall be 3,000 square feet (279 m^2), not less than 2,000 square feet (185.8 m^2) of which shall be provided for the working, practice and classroom areas.*

Exception: *When the average daily attendance for either day or night school in a school of cosmetology exceeds 50 students for a period of three months, an additional 30 square feet (2.8 m^2) of floor space shall be required for each additional student after the first 50, which shall be provided for the working, practice and classroom areas.*

1253.1.2 Schools of electrology. *The minimum floor space in any school of electrology premises shall be 1,000 square feet (93 m^2), not less than 600 square feet (55.7 m^2) of which shall be provided for the working, practice and classroom areas.*

Exception: *When the average daily attendance for either day or night school of electrology exceeds 15 students, an additional 30 square feet (2.8 m^2) of floor space shall be required for each additional student after the first 15, which shall be provided for working, practice and classroom areas.*

1253.1.3 Satellite classrooms. *The minimum floor space in any satellite classroom of a school of cosmetology or electrology shall be 1,000 square feet (93 m^2).*

Exception: *For each additional student after the first 50, an additional 20 square feet (1.9 m^2) of floor space shall be required.*

1253.2 Floor finish. *The floors in the toilet area of each school and establishment shall be of nonabsorbent material.*

1253.3 Celling height. *The minimum ceiling height of the practice and classroom areas of school premises shall be at least 9 feet (2743 mm) in height.*

SECTION 1254 [CA]—ACUPUNCTURE OFFICES

1254.1 Acupuncture offices. *Every acupuncture office shall have a readily accessible bathroom facility which shall be maintained in a clean and sanitary condition at all times. In addition, there shall be a sink with hot and cold running water in or near each treatment room.*

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CHAPTER
13

ENERGY EFFICIENCY

Refer to California Energy Code, Title 24, Part 6.

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CALIFORNIA BUILDING CODE – MATRIX ADOPTION TABLE
CHAPTER 14 – EXTERIOR WALLS

(Matrix Adoption Tables are nonregulatory, intended only as an aid to the code user.
See Chapter 1 for state agency authority and building applications.)

Adopting agency	BSC	BSC-CG	SFM	HCD			DSA			OSHPD							BSCC	DPH	AGR	DWR	CEC	CA	SL	SLC
				1	2	1/AC	AC	SS	SS/CC	1	1R	2	3	4	5	6								
Adopt entire chapter	**X**			**X**	**X**								**X**			**X**								
Adopt entire chapter as amended (amended sections listed below)								**X**	**X**	**X**	**X**	**X**		**X**	**X**									
Adopt only those sections that are listed below		**X**	**X**																		**X**			
Chapter / Section																								
1401			X																					
1402			X																					
1402.2.1		X																						
1403			X																					
1404			X																					
1404.1.2								X	X	X	X	X		X	X									
1404.3.3																					X			
1405			X																					
1406			X																					
1407			X																					
1408			X																					
1411			X																					
1412			X																					
1413								X	X	X	X	X		X	X									

The state agency does not adopt sections identified with the following symbol: †

The Office of the State Fire Marshal's adoption of this chapter or individual sections is applicable to structures regulated by other state agencies pursuant to Section 1.11.

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CHAPTER

14 EXTERIOR WALLS

User notes:

About this chapter: Chapter 14 addresses requirements for exterior walls of buildings. Minimum standards for wall covering materials, such as material performance and fire resistance, installation of wall coverings and the ability of the wall to provide weather protection are provided. This chapter also contains limitations on the areas and heights of combustible wall coverings based on fire separation distances, radiant heat exposure and surface burning characteristics.

ICC code development note: Code change proposals to sections preceded by the designation [BS] will be considered by the IBC—Structural Code Development Committee during the 2025 (Group B) Code Development Cycle.

SECTION 1401—GENERAL

1401.1 Scope. The provisions of this chapter shall establish the minimum requirements for exterior walls, exterior wall assemblies, exterior wall coverings, exterior wall openings, exterior windows and doors, exterior soffits and fascias, and architectural trim.

SECTION 1402—PERFORMANCE REQUIREMENTS

1402.1 General. The provisions of this section shall apply to exterior walls, exterior wall coverings and components thereof.

1402.2 Weather protection. Buildings shall be provided with a weather-resistant exterior wall assembly. The exterior wall assembly shall include flashing, as described in Section 1404.4. The exterior wall assembly shall be designed and constructed in such a manner as to prevent the accumulation of water within the exterior wall assembly by providing a water-resistive barrier behind the exterior veneer, as described in Section 1403.2, and a means for draining water that enters the assembly to the exterior. Protection against condensation in the exterior wall assembly shall be provided in accordance with Section 1404.3.

Exceptions:

1. A weather-resistant exterior wall assembly shall not be required over concrete or masonry walls designed in accordance with Chapters 19 and 21, respectively.
2. Compliance with the requirements for a means of drainage, and the requirements of Sections 1403.2 and 1404.4, shall not be required for an exterior wall assembly that has been demonstrated through testing to resist wind-driven rain, including joints, penetrations and intersections with dissimilar materials, in accordance with ASTM E331 under the following conditions:

   The exterior wall design shall be considered to resist wind-driven rain where the results of testing, in accordance with ASTM E331, indicate that water did not penetrate control joints in the exterior wall, joints at the perimeter of openings or intersections of terminations with dissimilar materials.

   2.1. Exterior wall test assemblies shall include not fewer than one opening, one control joint, one wall/eave interface and one wall sill. Tested openings and penetrations shall be representative of the intended end-use configuration.

   2.2. Exterior wall test assemblies shall be not less than 4 feet by 8 feet (1219 mm by 2438 mm) in size.

   2.3. Exterior wall test assemblies shall be tested at a minimum differential pressure of 6.24 pounds per square foot (0.297 kN/m^2).

   2.4. Exterior wall test assemblies shall be subjected to a minimum test exposure duration of 2 hours.
3. Exterior insulation and finish systems (EIFS) complying with Section 1407.4.1.

1402.2.1 [BSC-CG] *See California Green Building Standards Code, Chapter 5, Division 5.4 for additional weather protection requirements.*

[BS] 1402.3 Wind resistance. Exterior walls, exterior wall coverings, exterior soffits and fascias, and the associated openings, shall be designed and constructed to resist safely the superimposed loads required by Chapter 16.

[BS] 1402.3.1 Attachments through exterior insulation. Where exterior wall coverings are attached to the building structure through exterior continuous insulation, furring and attachments through the exterior insulation shall be designed to resist design loads determined in accordance with Chapter 16, including support of cladding weight as applicable. Exterior wall coverings attached to the building structure through foam plastic insulating sheathing shall comply with the attachment requirements of Section 1404.5.1, 1404.5.2 or 1404.5.3.

1402.4 Fire resistance. Exterior walls shall be fire-resistance rated as required by other sections of this code with opening protection as required by Chapter 7.

1402.5 Vertical and lateral flame propagation. Exterior walls on buildings of Type I, II, III and IV construction that contain a combustible exterior wall covering, combustible insulation or a combustible water-resistive barrier shall comply with Sections 1402.5.1 through 1402.5.5, as applicable. Where compliance with NFPA 285 and associated acceptance criteria is required in Sections 1402.5.1 through 1402.5.5, the exterior wall assembly shall be tested in accordance with and comply with the acceptance criteria of NFPA 285.

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1402.5.1 Combustible water-resistive barrier. Exterior walls containing a combustible water-resistive barrier shall comply with Section 1402.6.

1402.5.2 Metal composite material (MCM). Exterior walls containing metal composite material (MCM) systems shall comply with Section 1406.

1402.5.3 Exterior insulation and finish system (EIFS). Exterior walls containing an exterior insulation and finish system (EIFS) shall comply with Section 1407.

1402.5.4 High-pressure decorative exterior-grade compact laminate (HPL) system. Exterior walls containing a high-pressure decorative exterior-grade compact laminate (HPL) system shall comply with Section 1408.

1402.5.5 Foam plastic insulation. Exterior walls containing foam plastic insulation shall comply with Section 2603.

1402.6 Water-resistive barriers. Exterior walls on buildings of Type I, II, III or IV construction that are greater than 40 feet (12 192 mm) in height above grade plane and contain a combustible water-resistive barrier shall be tested in accordance with and comply with the acceptance criteria of NFPA 285.Combustibility shall be determined in accordance with Section 703.3. For the purposes of this section, fenestration products, flashing of fenestration products and water-resistive-barrier flashing and accessories at other locations, including through wall flashings, shall not be considered part of the water-resistive barrier.

Exceptions:

1. Exterior walls in which the water-resistive barrier is the only combustible component and the exterior wall has an exterior wall covering of brick, concrete, stone, terra cotta, stucco or steel with minimum thicknesses in accordance with Table 1404.2.
2. Exterior walls in which the water-resistive barrier is the only combustible component and the water-resistive barrier complies with the following:
   - 2.1 A peak heat release rate of less than 150 kW/m^2, a total heat release of less than 20 MJ/m^2 and an effective heat of combustion of less than 18 MJ/kg when tested on specimens at the thickness intended for use, in accordance with ASTM E1354, in the horizontal orientation and at an incident radiant heat flux of 50 kW/m^2.
   - 2.2 A flame spread index of 25 or less and a smoke-developed index of 450 or less as determined in accordance with ASTM E84 or UL 723, with test specimen preparation and mounting in accordance with ASTM E2404.

1402.7 Exterior wall veneers manufactured using combustible adhesives. Exterior wall assemblies on buildings of Type I, II, III or IV construction that are greater than 40 feet (12 192 mm) in height above grade plane and contain an exterior wall veneer manufactured using a combustible adhesive to laminate a metal core with noncombustible facing materials shall be tested in accordance with, and comply with, the acceptance criteria of NFPA 285, with the adhesive level at the maximum application rate intended for use. Combustibility shall be determined in accordance with Section 703.3.

1402.8 Vertical and lateral flame propagation compliance methods. When exterior wall assemblies are required in this chapter to be tested for vertical and lateral flame propagation in accordance with and comply with the acceptance criteria of NFPA 285, compliance with the requirements shall be established by any of the following:

1. An exterior wall assembly tested in accordance with and meeting the acceptance criteria of NFPA 285.
2. An exterior wall assembly design listed by an approved agency for compliance with NFPA 285.
3. An approved analysis based on an assembly or condition tested in accordance with and meeting the acceptance criteria of NFPA 285.

[BS] 1402.9 Flood resistance. For buildings in flood hazard areas as established in Section 1612.3, exterior walls extending below the elevation required by Section 1612 shall be constructed with flood-damage-resistant materials.

[BS] 1402.10 Flood resistance for coastal high-hazard areas and coastal A zones. For buildings in coastal high-hazard areas and coastal A zones as established in Section 1612.3, electrical, mechanical and plumbing system components shall not be mounted on or penetrate through exterior walls that are designed to break away under flood loads.

SECTION 1403—MATERIALS

1403.1 General. Materials used for the construction of exterior walls shall comply with the provisions of this section. Materials not prescribed herein shall be permitted, provided that any such alternative has been approved.

1403.2 Water-resistive barrier. Not fewer than one layer of water-resistive barrier material shall be attached to the studs or sheathing, with flashing as described in Section 1404.4, in such a manner as to provide a continuous water-resistive barrier behind the exterior wall veneer. The intersection between the water-resistive barrier material and fenestration openings shall be flashed and assembled in accordance with the fenestration manufacturer's installation instructions, or other approved methods for applications not addressed by the fenestration manufacturer's instructions. The water-resistive barrier material shall be continuous to the top of walls and terminated at penetrations and building appendages in a manner to meet the requirements of the exterior wall envelope as described in Section 1402.2.

Water-resistive barriers shall comply with one of the following:

1. No. 15 felt complying with ASTM D226, Type 1.
2. ASTM E2556, Type I or II.

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3. Foam plastic insulating sheathing water-resistive barrier systems complying with Section 1402.2 and installed in accordance with manufacturer's installation instructions.
4. ASTM E331 in accordance with Section 1402.2.
5. Other approved materials installed in accordance with the manufacturer's installation instructions.

No. 15 asphalt felt and water-resistive barriers complying with ASTM E2556 shall be applied horizontally with the upper layer lapped over the lower layer not less than 2 inches (51 mm). Where joints occur, the upper and lower layer shall be lapped not less than 6 inches (152 mm).

[BS] 1403.3 Wood. Exterior walls of wood construction shall be designed and constructed in accordance with Chapter 23.

[BS] 1403.3.1 Basic hardboard. Basic hardboard shall conform to the requirements of ANSI A135.4.

[BS] 1403.3.2 Hardboard siding. Hardboard siding shall conform to the requirements of ANSI A135.6 and, where used structurally, shall be so identified by the label of an approved agency.

[BS] 1403.4 Masonry. Exterior walls of masonry construction shall be designed and constructed in accordance with this section and Chapter 21. Masonry units, mortar and metal accessories used in anchored and adhered veneer shall meet the physical requirements of Chapter 21. The backing of anchored and adhered veneer shall be of concrete, masonry, steel framing or wood framing. Continuous insulation meeting the applicable requirements of this code shall be permitted between the backing and the masonry veneer.

[BS] 1403.5 Metal. Exterior walls constructed of cold-formed or structural steel shall be designed in accordance with Chapter 22. Exterior walls constructed of aluminum shall be designed in accordance with Chapter 20.

[BS] 1403.5.1 Aluminum siding. Aluminum siding shall conform to the requirements of AAMA 1402.

[BS] 1403.5.2 Cold-rolled copper. Copper shall conform to the requirements of ASTM B370.

[BS] 1403.5.3 Lead-coated copper. Lead-coated copper shall conform to the requirements of ASTM B101.

[BS] 1403.6 Concrete. Exterior walls of concrete construction shall be designed and constructed in accordance with Chapter 19.

[BS] 1403.7 Glass-unit masonry Exterior walls of glass-unit masonry shall be designed and constructed in accordance with Chapter 21.

1403.8 Vinyl siding. Vinyl siding shall be certified and labeled as conforming to the requirements of ASTM D3679 by an approved agency.

1403.9 Fiber-cement siding. Fiber-cement siding shall conform to the requirements of ASTM C1186, Type A (or ISO 8336, Category A), and shall be so identified on labeling listing an approved agency.

1403.10 Exterior insulation and finish systems. Exterior insulation and finish systems (EIFS) and exterior insulation and finish systems (EIFS) with drainage shall comply with Section 1407.

1403.11 Polypropylene siding. Polypropylene siding shall be certified and labeled as conforming to the requirements of ASTM D7254 and those of Section 1403.11.1 or 1403.11.2 by an approved agency. Polypropylene siding shall be installed in accordance with the requirements of Section 1404.18 and in accordance with the manufacturer's instructions. Polypropylene siding shall be secured to the building so as to provide weather protection for the exterior walls of the building.

1403.11.1 Flame spread index. The certification of the flame spread index shall be accompanied by a test report stating that all portions of the test specimen ahead of the flame front remained in position during the test in accordance with ASTM E84 or UL 723.

1403.11.2 Fire separation distance. The fire separation distance between a building with polypropylene siding and the adjacent building shall be not less than 10 feet (3048 mm).

1403.12 Foam plastic insulation. Foam plastic insulation used in exterior wall assemblies shall comply with Chapter 26.

1403.13 Fiber-mat reinforced cementitious backer units. Fiber-mat reinforced cementitious backer units used as an exterior substrate for the application of exterior finish materials shall comply with ASTM C1325.

1403.14 Insulated vinyl siding. Insulated vinyl siding shall be certified and labeled as conforming to the requirements of ASTM D7793 by an approved agency.

SECTION 1404—INSTALLATION OF WALL COVERINGS

1404.1 General. Exterior wall coverings shall be designed and constructed in accordance with the applicable provisions of this section.

1404.1.1 Soffits and fascias. Soffits and fascias installed as part of roof overhangs shall comply with Section 1412.

1404.1.2 Additional requirements. [DSA-SS, DSA-SS/CC, OSHPD 1, 1R, 2, 4 & 5] *In addition to the requirements of Section 1404, the installation of anchored or adhered veneer shall comply with applicable provisions of Section 1413.*

1404.2 Weather protection. Exterior walls shall provide weather protection for the building. The materials of the minimum nominal thickness specified in Table 1404.2 shall be acceptable as approved weather coverings.

TABLE 1404.2—MINIMUM THICKNESS OF WEATHER COVERINGS	
COVERING TYPE	**MINIMUM THICKNESS (inches)**
Adhered masonry veneer	0.25
Aluminum siding	0.019
Anchored masonry veneer	
Stone (natural)	2.0
Architectural cast stone	2.5
Other	2.0
Asbestos-cement boards	0.125
Asbestos shingles	0.156
Cold-rolled copper[d]	0.0216 nominal
Copper shingles[d]	0.0162 nominal
Exterior plywood (with sheathing)	0.313
Exterior plywood (without sheathing)	See Section 2304.6
Fiber cement lap siding	0.25[c]
Fiber cement panel siding	0.25[c]
Fiberboard siding	0.5
Fiber-mat reinforced cementitious backer units	0.5
Glass-fiber reinforced concrete panels	0.375
Hardboard siding[c]	0.25
High-yield copper[d]	0.0162 nominal
Lead-coated copper[d]	0.0216 nominal
Lead-coated high-yield copper	0.0162 nominal
Marble slabs	1
Particleboard (with sheathing)	See Section 2304.6
Particleboard (without sheathing)	See Section 2304.6
Porcelain tile	0.125 nominal
Steel (approved corrosion resistant)	0.0149
Structural glass	0.344
Stucco or exterior cement plaster	
Three-coat work over:	
Metal plaster base	0.875[b]
Unit masonry	0.625[b]
Cast-in-place or precast concrete	0.625[b]
Two-coat work over:	
Unit masonry	0.5[b]
Cast-in-place or precast concrete	0.375[b]
Terra cotta (anchored)	1
Terra cotta (adhered)	0.25
Vinyl siding	0.035
Wood shingles	0.375
Wood siding (without sheathing)[a]	0.5

For SI: 1 inch = 25.4 mm, 1 ounce = 28.35 g, 1 square foot = 0.093 m^2.

a. Wood siding of thicknesses less than 0.5 inch shall be placed over sheathing that conforms to Section 2304.6.

b. Exclusive of texture.

c. As measured at the bottom of decorative grooves.

d. 16 ounces per square foot for cold-rolled copper and lead-coated copper, 12 ounces per square foot for copper shingles, high-yield copper and lead-coated high-yield copper.

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1404.3 Vapor retarders. Vapor retarder materials shall be classified in accordance with Table 1404.3(1). A vapor retarder shall be provided on the interior side of frame walls in accordance with Table 1404.3(2) and Tables 1404.3(3) or 1404.3(4) as applicable, or an approved design using accepted engineering practice for hygrothermal analysis. Vapor retarders shall be installed in accordance with Section 1404.3.2. The appropriate climate zone shall be selected in accordance with the *California Energy Code*.

Exceptions:

1. Basement walls.
2. Below-grade portion of any wall.
3. Construction where accumulation, condensation or freezing of moisture will not damage the materials.
4. A vapor retarder shall not be required in Climate Zones 1, 2, and 3.
5. In Climate Zones 4 through 8, a vapor retarder on the interior side of frame walls shall not be required where the assembly complies with Table 1404.3(5).

TABLE 1404.3(1)—VAPOR RETARDER MATERIALS AND CLASSES

VAPOR RETARDER CLASS	ACCEPTABLE MATERIALS
I	Sheet polyethylene, nonperforated aluminum foil, or other approved materials with a perm rating of less than or equal to 0.1
II	Kraft-faced fiberglass batts or vapor retarder paint or other approved materials, applied in accordance with the manufacturer's instructions for a perm rating greater than 0.1 and less than or equal to 1.0
III	Latex paint, enamel paint, or other approved materials, applied in accordance with the manufacturer's instructions for a perm rating of greater than 1.0 and less than or equal to 10

TABLE 1404.3(2)—VAPOR RETARDER OPTIONS

CLIMATE ZONE	VAPOR RETARDER CLASS		
	I[a]	II[a]	III
1, 2	Not permitted	Not Permitted	Permitted
3	Not permitted	Permitted[c]	Permitted
4 (except Marine)	Not permitted	Permitted[c]	See Table 1404.3(3)
Marine 4, 5, 6, 7, 8	Permitted[b, c]	Permitted[c]	See Table 1404.3(3)

a. A responsive vapor retarder shall be allowed on the interior side of any frame wall in all climate zones.
b. In frame walls with a Class I vapor retarder on the exterior side, use of a Class I interior vapor retarder that is not a responsive vapor retarder shall require an *approved* design.
c. Where a Class I or II vapor retarder is used in combination with foam plastic insulating sheathing installed as continuous insulation on the exterior side of frame walls, the continuous insulation shall comply with Table 1404.3(4) and the Class I or II vapor retarder shall be a responsive vapor retarder.

TABLE 1404.3(3)—CLASS III VAPOR RETARDERS

ZONE	CLASS III VAPOR RETARDERS PERMITTED FOR:[a, b]
4	Vented cladding over wood structural panels Vented cladding over fiberboard Vented cladding over gypsum Continuous insulation with *R*-value ≥ R-2.5 over 2 × 4 wall Continuous insulation with *R*-value ≥ R-3.75 over 2 × 6 wall
5	Vented cladding over wood structural panels Vented cladding over fiberboard Vented cladding over gypsum Continuous insulation with *R*-value ≥ R-5 over 2 × 4 wall Continuous insulation with *R*-value ≥ R-7.5 over 2 × 6 wall
6	Vented cladding over fiberboard Vented cladding over gypsum Continuous insulation with *R*-value ≥ R-7.5 over 2 × 4 wall Continuous insulation with *R*-value ≥ R-11.25 over 2 × 6 wall
7	Continuous insulation with *R*-value ≥ R-10 over 2 × 4 wall Continuous insulation with *R*-value ≥ R-15 over 2 × 6 wall
8	Continuous insulation with *R*-value ≥ R-12.5 over 2 × 4 wall Continuous insulation with *R*-value ≥ R-20 over 2 × 6 wall

a. Vented cladding shall include vinyl lap siding, polypropylene, horizontal aluminum siding, brick veneer with airspace as specified in this code, rainscreen systems and other approved vented claddings.
b. The requirements in this table apply only to insulation used to control moisture in order to permit the use of Class III vapor retarders. The insulation materials used to satisfy this option also contribute to but do not supersede the building thermal envelope requirements of the *California Energy Code*.

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TABLE 1404.3(4)—CONTINUOUS INSULATION WITH A CLASS I OR II RESPONSIVE VAPOR RETARDER	
CLIMATE ZONE	**PERMITTED CONDITIONS[a]**
3	Continuous insulation with *R*-value ≥ R-2
4, 5, 6	Continuous insulation with *R*-value ≥ R-3 over 2 × 4 wall Continuous insulation with *R*-value ≥ R-5 over 2 × 6 wall
7	Continuous insulation with *R*-value ≥ R-5 over 2 × 4 wall Continuous insulation with *R*-value ≥ R-7.5 over 2 × 6 wall
8	Continuous insulation with *R*-value ≥ R-7.5 over 2 × 4 wall Continuous insulation with *R*-value ≥ R-10 over 2 × 6 wall

a. The requirements in this table apply only to insulation used to control moisture in order to permit the use of Class I or II vapor retarders. The insulation materials used to satisfy this option also contribute to but do not supersede the building thermal envelope requirements of the *California Energy Code*.

TABLE 1404.3(5)—CONTINUOUS INSULATION ON WALLS WITHOUT A CLASS I, II, OR III INTERIOR VAPOR RETARDER[a]	
CLIMATE ZONE	**PERMITTED CONDITIONS[b,c]**
4	Continuous insulation with *R*-value ≥ 4.5
5	Continuous insulation with *R*-value ≥ 6.5
6	Continuous insulation with *R*-value ≥ 8.5
7	Continuous insulation with *R*-value ≥ 11.5
8	Continuous insulation with *R*-value ≥ 14

a. The total insulating value of materials to the interior side of the exterior continuous insulation, including any cavity insulation, shall not exceed R-5. Where the *R*-value of materials to the interior side of the exterior continuous insulation exceeds R-5, an *approved* design shall be required.

b. A water vapor control material layer having a permeance of not greater than 1 perm in accordance with ASTM E96, Procedure A (dry cup) shall be placed on the exterior side of the wall and to the interior side of the exterior continuous insulation. The exterior continuous insulation shall be permitted to serve as the vapor control layer where, at its installed thickness or with a facer on its interior face, the exterior continuous insulation is a Class I or II vapor retarder.

c. The requirements of this table apply only to continuous insulation used to control moisture in order to allow walls without a Class I, II or III interior vapor retarder. The insulation materials used to satisfy this option also contribute to but do not supersede the *building* thermal envelope requirements of the *California Energy Code*.

1404.3.1 Spray foam plastic insulation for moisture control with Class II and III vapor retarders. For purposes of compliance with Tables 1404.3(3) and 1404.3(4), spray foam with a maximum permeance of 1.5 perms at the installed thickness applied to the interior side of wood structural panels, fiberboard, insulating sheathing or gypsum shall be deemed to meet the continuous insulation moisture control requirement in accordance with one of the following conditions:

1. The spray foam *R*-value meets or exceeds the specified continuous insulation R-value.
2. The combined *R*-value of the spray foam and continuous insulation is equal to or greater than the specified continuous insulation *R*-value.

➡ **1404.3.2 Vapor retarder installation.** Vapor retarders shall be installed in accordance with the manufacturer's instructions or an approved design. Where a vapor retarder also functions as a component of a continuous air barrier, the vapor retarder shall be installed as an air barrier in accordance with the *California Energy Code*.

1404.3.3 California Energy Code and International Energy Conservation Code Climate Zones. *The IECC climate zones used by this section differ from those used by the California Energy Code to determine applicability of energy efficiency measures. Comparison of IECC and California Energy Code climate zones is shown in Chapter 12, Table 1202.3.1.*

1404.4 Flashing. Flashing shall be installed in such a manner so as to prevent moisture from entering the exterior wall or to redirect that moisture to the surface of the exterior wall covering or to a water-resistive barrier complying with Section 1403.2 and that is part of a means of drainage complying with Section 1402.2. Flashing shall be installed at the perimeters of exterior door and window assemblies in accordance with Section 1404.4.1, penetrations and terminations of exterior wall assemblies, exterior wall intersections with roofs, chimneys, porches, decks, balconies and similar projections and at built-in gutters and similar locations where moisture could enter the wall. Flashing with projecting flanges shall be installed on both sides and the ends of copings, under sills and continuously above projecting trim. Where self-adhered membranes are used as flashings of fenestration in exterior wall assemblies, those self-adhered flashings shall comply with AAMA 711. Where fluid applied membranes are used as flashing for exterior wall openings, those fluid applied membrane flashings shall comply with AAMA 714.

1404.4.1 Fenestration flashing. Flashing of the fenestration to the wall assembly shall comply with the fenestration manufacturer's instructions or, for conditions not addressed by the fenestration manufacturer's instructions, shall comply with one of the following:

1. The water-resistive barrier manufacturer's flashing instructions.
2. The flashing manufacturer's flashing instructions.
3. A flashing design or method of a registered design professional.
4. Other approved methods.

1404.4.2 Exterior wall pockets. In exterior walls of buildings or structures, wall pockets or crevices in which moisture can accumulate shall be avoided or protected with caps or drips, or other approved means shall be provided to prevent water damage.

1404.4.3 Masonry. Flashing and weep holes in anchored veneer designed in accordance with Section 1404.7 shall be located not more than 10 inches (245 mm) above finished ground level above the foundation wall or slab. At other points of support including structural floors, shelf angles and lintels, flashing and weep holes shall be located in the first course of masonry above the support.

[BS] 1404.5 Fastening. Exterior wall coverings shall be securely fastened with corrosion-resistant fasteners in accordance with this code or the approved manufacturer's instructions. Fastening of claddings or furring through foam plastic insulating sheathing shall comply with Section 1404.5.1, 1404.5.2 or 1404.5.3, as applicable.

[BS] 1404.5.1 Cladding attachment over foam sheathing to masonry or concrete wall construction. Cladding shall be specified and installed in accordance with this chapter and the cladding manufacturer's installation instructions or an approved design. Foam sheathing shall be attached to masonry or concrete construction in accordance with the insulation manufacturer's installation instructions or an approved design. Furring and furring attachments through foam sheathing shall be designed to resist design loads determined in accordance with Chapter 16, including support of cladding weight as applicable. Fasteners used to attach cladding or furring through foam sheathing to masonry or concrete substrates shall be approved for application into masonry or concrete material and shall be installed in accordance with the fastener manufacturer's installation instructions.

Exceptions:

1. Where the cladding manufacturer has provided approved installation instructions for application over foam sheathing and connection to a masonry or concrete substrate, those requirements shall apply.
2. For exterior insulation and finish systems, refer to Section 1407.
3. For anchored masonry or stone veneer installed over foam sheathing, refer to Section 1404.

[BS] 1404.5.2 Cladding attachment over foam sheathing to cold-formed steel framing. Cladding shall be specified and installed in accordance with this chapter and the cladding manufacturer's approved installation instructions, including any limitations for use over foam plastic sheathing, or an approved design. Where used, furring and furring attachments shall be designed to resist design loads determined in accordance with Chapter 16. In addition, the cladding or furring attachments through foam sheathing to cold-formed steel framing shall meet or exceed the minimum fastening requirements of Sections 1404.5.2.1 and 1404.5.2.2, or an approved design for support of cladding weight.

Exceptions:

1. Where the cladding manufacturer has provided approved installation instructions for application over foam sheathing, those requirements shall apply.
2. For exterior insulation and finish systems, refer to Section 1407.
3. For anchored masonry or stone veneer installed over foam sheathing, refer to Section 1404.

[BS] 1404.5.2.1 Direct attachment. Where cladding is installed directly over foam sheathing without the use of furring, cladding minimum fastening requirements to support the cladding weight shall be as specified in Table 1404.5.2.1.

[BS] TABLE 1404.5.2.1—CLADDING MINIMUM FASTENING REQUIREMENTS FOR DIRECT ATTACHMENT OVER FOAM PLASTIC SHEATHING TO SUPPORT CLADDING WEIGHT[a]

CLADDING FASTENER THROUGH FOAM SHEATHING INTO:	CLADDING FASTENER TYPE AND MINIMUM SIZE[b]	CLADDING FASTENER VERTICAL SPACING (inches)	MAXIMUM THICKNESS OF FOAM SHEATHING[c] (inches)							
			16″ o.c. fastener horizontal spacing				24″ o.c. fastener horizontal spacing			
			Cladding weight				Cladding weight			
			3 psf	11 psf	18 psf	25 psf	3 psf	11 psf	18 psf	25 psf
Cold-formed steel framing (minimum penetration of steel thickness plus 3 threads)	#8 screw into 33 mil steel or thicker	6	3.00	2.95	2.20	1.45	3.00	2.35	1.25	DR
		8	3.00	2.55	1.60	0.60	3.00	1.80	DR	DR
		12	3.00	1.80	DR	DR	3.00	0.65	DR	DR
	#10 screw into 33 mil steel	6	4.00	3.50	2.70	1.95	4.00	2.90	1.70	0.55
		8	4.00	3.10	2.05	1.00	4.00	2.25	0.70	DR
		12	4.00	2.25	0.70	DR	3.70	1.05	DR	DR
	#10 screw into 43 mil steel or thicker	6	4.00	4.00	4.00	3.60	4.00	4.00	3.45	2.70
		8	4.00	4.00	3.70	3.00	4.00	3.85	2.80	1.80
		12	4.00	3.85	2.80	1.80	4.00	3.05	1.50	DR

For SI: 1 inch = 25.4 mm, 1 pound per square foot (psf) = 0.0479 kPa, 1 pound per square inch = 0.00689 MPa.
DR = design required, o.c. = on center.
a. Cold-formed steel framing shall be minimum 33 ksi steel for 33 mil and 43 mil steel and 50 ksi steel for 54 mil steel or thicker.
b. Screws shall comply with the requirements of AISI S240.
c. Foam sheathing shall have a minimum compressive strength of 15 pounds per square inch in accordance with ASTM C578 or ASTM C1289.

[BS] 1404.5.2.2 Furred cladding attachment. Where steel or wood furring is used to attach cladding over foam sheathing, furring minimum fastening requirements to support the cladding weight shall be as specified in Table 1404.5.2.2. Where placed horizontally, wood furring shall be preservative-treated wood in accordance with Section 2303.1.9 or naturally durable wood and fasteners shall be corrosion resistant in accordance Section 2304.10.6. Steel furring shall have a minimum G60 galvanized coating.

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[BS] TABLE 1404.5.2.2—FURRING MINIMUM FASTENING REQUIREMENTS FOR APPLICATION OVER FOAM PLASTIC SHEATHING TO SUPPORT CLADDING WEIGHT[a]

FURRING MATERIAL	FRAMING MEMBER	FASTENER TYPE AND MINIMUM SIZE[b]	MINIMUM PENETRATION INTO WALL FRAMING (inches)	FASTENER SPACING IN FURRING (inches)	MAXIMUM THICKNESS OF FOAM SHEATHING[d] (inches)							
					16″ o.c. furring[e]				24″ o.c. furring[e]			
					Cladding weight				Cladding weight			
					3 psf	11 psf	18 psf	25 psf	3 psf	11 psf	18 psf	25 psf
Minimum 33 mil steel furring or minimum 1x wood furring[c]	33 mil cold-formed steel stud	#8 screw	Steel thickness plus 3 threads	12	3.00	1.80	DR	DR	3.00	0.65	DR	DR
				16	3.00	1.00	DR	DR	2.85	DR	DR	DR
				24	2.85	DR	DR	DR	2.20	DR	DR	DR
		#10 screw	Steel thickness plus 3 threads	12	4.00	2.25	0.70	DR	3.70	1.05	DR	DR
				16	3.85	1.45	DR	DR	3.40	DR	DR	DR
				24	3.40	DR	DR	DR	2.70	DR	DR	DR
	43 mil or thicker cold-formed steel stud	#8 Screw	Steel thickness plus 3 threads	12	3.00	1.80	DR	DR	3.00	0.65	DR	DR
				16	3.00	1.00	DR	DR	2.85	DR	DR	DR
				24	2.85	DR	DR	DR	2.20	DR	DR	DR
		#10 screw	Steel thickness plus 3 threads	12	4.00	3.85	2.80	1.80	4.00	3.05	1.50	DR
				16	4.00	3.30	1.95	0.60	4.00	2.25	DR	DR
				24	4.00	2.25	DR	DR	4.00	0.65	DR	DR

For SI: 1 inch = 25.4 mm, 1 pound per square foot (psf) = 0.0479 kPa, 1 pound per square inch = 0.00689 MPa.

DR = Design Required, o.c. = on center.

a. Wood furring shall be spruce-pine-fir or any softwood species with a specific gravity of 0.42 or greater. Steel furring shall be minimum 33 ksi steel. Cold-formed steel studs shall be minimum 33 ksi steel for 33 mil and 43 mil thickness and 50 ksi steel for 54 mil steel or thicker.

b. Screws shall comply with the requirements of AISI S240.

c. Where the required cladding fastener penetration into wood material exceeds $^3/_4$ inch and is not more than $1^1/_2$ inches, a minimum 2-inch nominal wood furring or an approved design shall be used.

d. Foam sheathing shall have a minimum compressive strength of 15 pounds per square inch in accordance with ASTM C578 or ASTM C1289.

e. Furring shall be spaced not more than 24 inches on center, in a vertical or horizontal orientation. In a vertical orientation, furring shall be located over wall studs and attached with the required fastener spacing. In a horizontal orientation, the indicated 8-inch and 12-inch fastener spacing in furring shall be achieved by use of two fasteners into studs at 16 inches and 24 inches on center, respectively.

[BS] 1404.5.3 Cladding attachment over foam sheathing to wood framing. Cladding shall be specified and installed in accordance with this chapter and the cladding manufacturer's installation instructions. Where used, furring and furring attachments shall be designed to resist design loads determined in accordance with Chapter 16. In addition, the cladding or furring attachments through foam sheathing to framing shall meet or exceed the minimum fastening requirements of Section 1404.5.3.1 or 1404.5.3.2, or an approved design for support of cladding weight.

Exceptions:

1. Where the cladding manufacturer has provided approved installation instructions for application over foam sheathing, those requirements shall apply.
2. For exterior insulation and finish systems, refer to Section 1407.
3. For anchored masonry or stone veneer installed over foam sheathing, refer to Section 1404.

[BS] 1404.5.3.1 Direct attachment. Where cladding is installed directly over foam sheathing without the use of furring, minimum fastening requirements to support the cladding weight shall be as specified in Table 1404.5.3.1.

[BS] TABLE 1404.5.3.1—CLADDING MINIMUM FASTENING REQUIREMENTS FOR DIRECT ATTACHMENT OVER FOAM PLASTIC SHEATHING TO SUPPORT CLADDING WEIGHT[a]

CLADDING FASTENER THROUGH FOAM SHEATHING INTO:	CLADDING FASTENER TYPE AND MINIMUM SIZE[c]	CLADDING FASTENER VERTICAL SPACING (INCHES)	MAXIMUM THICKNESS OF FOAM SHEATHING[d] (INCHES)							
			16″ o.c. fastener horizontal spacing				24″ o.c. fastener horizontal spacing			
			Cladding weight:				Cladding weight:			
			3 psf	11 psf	18 psf	25 psf	3 psf	11 psf	18 psf	25 psf
Wood Framing (minimum $1^1/_4$- inch penetration)[b]	0.113" diameter nail	6	2.00	1.45	0.75	DR	2.00	0.85	DR	DR
		8	2.00	1.00	DR	DR	2.00	0.55	DR	DR
		12	2.00	0.55	DR	DR	1.85	DR	DR	DR

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[BS] TABLE 1404.5.3.1—CLADDING MINIMUM FASTENING REQUIREMENTS FOR DIRECT ATTACHMENT OVER FOAM PLASTIC SHEATHING TO SUPPORT CLADDING WEIGHT[a]—continued

CLADDING FASTENER THROUGH FOAM SHEATHING INTO:	CLADDING FASTENER TYPE AND MINIMUM SIZE[c]	CLADDING FASTENER VERTICAL SPACING (INCHES)	MAXIMUM THICKNESS OF FOAM SHEATHING[d] (INCHES)							
			16″ o.c. fastener horizontal spacing				24″ o.c. fastener horizontal spacing			
			Cladding weight:				Cladding weight:			
			3 psf	11 psf	18 psf	25 psf	3 psf	11 psf	18 psf	25 psf
Wood Framing (minimum $1^1/_4$- inch penetration)[b]	0.120" diameter nail	6	3.00	1.70	0.90	0.55	3.00	1.05	0.50	DR
		8	3.00	1.20	0.60	DR	3.00	0.70	DR	DR
		12	3.00	0.70	DR	DR	2.15	DR	DR	DR
	0.131" diameter nail	6	4.00	2.15	1.20	0.75	4.00	1.35	0.70	DR
		8	4.00	1.55	0.80	DR	4.00	0.90	DR	DR
		12	4.00	0.90	DR	DR	2.70	0.50	DR	DR
	0.162" diameter nail	6	4.00	3.55	2.05	1.40	4.00	2.25	1.25	0.80
		8	4.00	2.55	1.45	0.95	4.00	1.60	0.85	0.50
		12	4.00	1.60	0.85	0.50	4.00	0.95	DR	DR

For SI: 1 inch = 25.4 mm, 1 pound per square foot (psf) = 0.0479 kPa.

DR = Design Required, o.c. = on center.

a. Wood framing shall be spruce-pine-fir or any wood species with a specific gravity of 0.42 or greater in accordance with ANSI/AWC NDS.

b. The thickness of wood structural panels complying with the specific gravity requirement of Note a shall be permitted to be included in satisfying the minimum penetration into framing.

c. Nail fasteners shall comply with ASTM F1667, except nail length shall be permitted to exceed ASTM F1667 standard lengths.

d. Foam sheathing shall have a minimum compressive strength of 15 psi in accordance with ASTM C578 or ASTM C1289.

[BS] 1404.5.3.2 Furred cladding attachment. Where wood furring is used to attach cladding over foam sheathing, furring minimum fastening requirements to support the cladding weight shall be as specified in Table 1404.5.3.2. Where placed horizontally, wood furring shall be preservative-treated wood in accordance with Section 2303.1.9 or naturally durable wood and fasteners shall be corrosion resistant in accordance with Section 2304.10.6.

[BS] TABLE 1404.5.3.2—FURRING MINIMUM FASTENING REQUIREMENTS FOR APPLICATION OVER FOAM PLASTIC SHEATHING TO SUPPORT CLADDING WEIGHT[a, b]

FURRING MATERIAL	FRAMING MEMBER	FASTENER TYPE AND MINIMUM SIZE	MINIMUM PENETRATION INTO WALL FRAMING (INCHES)[c]	FASTENER SPACING IN FURRING (INCHES)	MAXIMUM THICKNESS OF FOAM SHEATHING[e] (INCHES)							
					16″ o.c. furring[f]				24″ o.c. furring[f]			
					Siding weight:				Siding weight:			
					3 psf	11 psf	18 psf	25 psf	3 psf	11 psf	18 psf	25 psf
Minimum 1x Wood Furring[d]	Minimum 2x Wood Stud	0.131" diameter nail	$1^1/_4$	8	4.00	2.45	1.45	0.95	4.00	1.60	0.85	DR
				12	4.00	1.60	0.85	DR	4.00	0.95	DR	DR
				16	4.00	1.10	DR	DR	3.05	0.60	DR	DR
		0.162" diameter nail	$1^1/_4$	8	4.00	4.00	2.45	1.60	4.00	2.75	1.45	0.85
				12	4.00	2.75	1.45	0.85	4.00	1.65	0.75	DR
				16	4.00	1.90	0.95	DR	4.00	1.05	DR	DR
		No. 10 wood screw	1	12	4.00	2.30	1.20	0.70	4.00	1.40	0.60	DR
				16	4.00	1.65	0.75	DR	4.00	0.90	DR	DR
				24	4.00	0.90	DR	DR	2.85	DR	DR	DR
		$^1/_4$" lag screw	$1^1/_2$	12	4.00	2.65	1.50	0.90	4.00	1.65	0.80	DR
				16	4.00	1.95	0.95	0.50	4.00	1.10	DR	DR
				24	4.00	1.10	DR	DR	3.25	0.50	DR	DR

For SI: 1 inch = 25.4 mm, 1 pound per square foot (psf) = 0.0479 kPa, 1 pound per square inch = 0.00689 MPa.

DR = Design Required, o.c. = on center.

a. Wood framing and furring shall be spruce-pine-fir or any wood species with a specific gravity of 0.42 or greater in accordance with ANSI/AWC NDS.

b. Nail fasteners shall comply with ASTM F1667, except nail length shall be permitted to exceed ASTM F1667 standard lengths.

c. The thickness of wood structural panels complying with the specific gravity requirements of Note a shall be permitted to be included in satisfying the minimum required penetration into framing.

d. Where the required cladding fastener penetration into wood material exceeds $^3/_4$ inch and is not more than $1^1/_2$ inches, a minimum 2-inch nominal wood furring or an approved design shall be used.

e. Foam sheathing shall have a minimum compressive strength of 15 psi in accordance with ASTM C578 or ASTM C1289.

f. Furring shall be spaced not greater than 24 inches on center in a vertical or horizontal orientation. In a vertical orientation, furring shall be located over wall studs and attached with the required fastener spacing. In a horizontal orientation, the indicated 8-inch and 12-inch fastener spacing in furring shall be achieved by use of two fasteners into studs at 16 inches and 24 inches on center, respectively.

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1404.6 Wood veneers. Wood veneers on exterior walls of buildings of Types I, II, III and IV construction shall be not less than 1 inch (25 mm) nominal thickness, 0.438-inch (11.1 mm) exterior hardboard siding or 0.375-inch (9.5 mm) exterior-type wood structural panels or particleboard and shall conform to the following:

1. The veneer shall not exceed 40 feet (12 190 mm) in height above grade. Where fire-retardant-treated wood is used, the height shall not exceed 60 feet (18 290 mm) in height above grade.
2. The veneer is attached to or furred from a noncombustible backing that is fire-resistance rated as required by other provisions of this code.
3. Where open or spaced wood veneers (without concealed spaces) are used, they shall not project more than 24 inches (610 mm) from the building wall.

[BS] 1404.7 Anchored masonry veneer. Anchored masonry veneer shall comply with the provisions of Sections 1404.7 through 1404.10 and Sections 13.1 and 13.2 of TMS 402.

[BS] 1404.7.1 Tolerances. Anchored masonry veneers in accordance with Chapter 14 are not required to meet the tolerances in Article 3.3 G.1 of TMS 602.

[BS] 1404.8 Stone veneer. Anchored stone veneer units not exceeding 10 inches (254 mm) in thickness shall be anchored directly to masonry, concrete or to stud construction by one of the following methods:

1. With concrete or masonry backing, anchor ties shall be not less than 0.1055-inch (2.68 mm) corrosion-resistant wire, or approved equal, formed beyond the base of the backing. The legs of the loops shall be not less than 6 inches (152 mm) in length bent at right angles and laid in the mortar joint, and spaced so that the eyes or loops are 12 inches (305 mm) maximum on center in both directions. There shall be provided not less than a 0.1055-inch (2.68 mm) corrosion-resistant wire tie, or approved equal, threaded through the exposed loops for every 2 square feet (0.2 m^2) of stone veneer. This tie shall be a loop having legs not less than 15 inches (381 mm) in length bent so that the tie will lie in the stone veneer mortar joint. The last 2 inches (51 mm) of each wire leg shall have a right-angle bend. One-inch (25 mm) minimum thickness of cement grout shall be placed between the backing and the stone veneer.
2. With wood stud backing, a 2-inch by 2-inch (51 by 51 mm) 0.0625-inch (1.59 mm) zinc-coated or nonmetallic coated wire mesh with two layers of water-resistive barrier in accordance with Section 1403.2 shall be applied directly to wood studs spaced not more than 16 inches (406 mm) on center. On studs, the mesh shall be attached with 2-inch-long (51 mm) corrosion-resistant steel wire furring nails at 4 inches (102 mm) on center providing a minimum 1.125-inch (29 mm) penetration into each stud and with 8d annular threaded nails at 8 inches (203 mm) on center. into top and bottom plates or with equivalent wire ties. There shall be not less than a 0.1055-inch (2.68 mm) zinc-coated or nonmetallic coated wire, or approved equal, attached to the stud with not smaller than an 8d (0.120 in. diameter) annular threaded nail for every 2 square feet (0.2 m^2) of stone veneer. This tie shall be a loop having legs not less than 15 inches (381 mm) in length, so bent that the tie will lie in the stone veneer mortar joint. The last 2 inches (51 mm) of each wire leg shall have a right-angle bend. One-inch (25 mm) minimum thickness of cement grout shall be placed between the backing and the stone veneer.
3. With cold-formed steel stud backing, a 2-inch by 2-inch (51 by 51 mm) 0.0625-inch (1.59 mm) zinc-coated or nonmetallic coated wire mesh with two layers of water-resistive barrier in accordance with Section 1403.2 shall be applied directly to steel studs spaced a not more than 16 inches (406 mm) on center. The mesh shall be attached with corrosion-resistant #8 self-drilling, tapping screws at 4 inches (102 mm) on center, and at 8 inches (203 mm) on center into top and bottom tracks or with equivalent wire ties. Screws shall extend through the steel connection not fewer than three exposed threads. There shall be not less than a 0.1055-inch (2.68 mm) corrosion-resistant wire, or approved equal, attached to the stud with not smaller than a #8 self-drilling, tapping screw extending through the steel framing not fewer than three exposed threads for every 2 square feet (0.2 m^2) of stone veneer. This tie shall be a loop having legs not less than 15 inches (381 mm) in length, so bent that the tie will lie in the stone veneer mortar joint. The last 2 inches (51 mm) of each wire leg shall have a right-angle bend. Cement grout not less than 1 inch (25 mm) in thickness shall be placed between the backing and the stone veneer. The cold-formed steel framing members shall have a minimum bare steel thickness of 0.0428 inches (1.087 mm).

[BS] 1404.9 Slab-type veneer. Anchored slab-type veneer units not exceeding 2 inches (51 mm) in thickness shall be anchored directly to masonry, concrete or light-frame construction. For veneer units of marble, travertine, granite or other stone units of slab form, ties of corrosion-resistant dowels in drilled holes shall be located in the middle third of the edge of the units, spaced not more than 24 inches (610 mm) apart around the periphery of each unit with not less than four ties per veneer unit. Units shall not exceed 20 square feet (1.9 m^2) in area. If the dowels are not tight fitting, the holes shall be drilled not more than 0.063 inch (1.6 mm) larger in diameter than the dowel, with the hole countersunk to a diameter and depth equal to twice the diameter of the dowel in order to provide a tight-fitting key of cement mortar at the dowel locations where the mortar in the joint has set. Veneer ties shall be corrosion-resistant metal capable of resisting, in tension or compression, a force equal to two times the weight of the attached veneer. If made of sheet metal, veneer ties shall be not smaller in area than 0.0336 by 1 inch (0.853 by 25 mm) or, if made of wire, not smaller in diameter than 0.1483-inch (3.76 mm) wire.

[BS] 1404.10 Terra cotta. Anchored terra cotta or ceramic units not less than $1^5/_8$ inches (41 mm) thick shall be anchored directly to masonry, concrete or stud construction. Tied terra cotta or ceramic veneer units shall be not less than $1^5/_8$ inches (41 mm) thick with projecting dovetail webs on the back surface spaced approximately 8 inches (203 mm) on center. The facing shall be tied to the backing wall with corrosion-resistant metal anchors of not less than No. 8 gage wire installed at the top of each piece in horizontal bed joints not less than 12 inches (305 mm) nor more than 18 inches (457 mm) on center; these anchors shall be secured to $^1/_4$-inch (6.4 mm) corrosion-resistant pencil rods that pass through the vertical aligned loop anchors in the backing wall. The veneer ties shall have sufficient strength to support the full weight of the veneer in tension. The facing shall be set with not less than a 2-inch (51 mm)

space from the backing wall and the space shall be filled solidly with Portland cement grout and pea gravel. Immediately prior to setting, the backing wall and the facing shall be drenched with clean water and shall be distinctly damp when the grout is poured.

[BS] 1404.11 Adhered masonry veneer. Adhered masonry veneer shall comply with the applicable requirements in this section and Sections 13.1 and 13.2 of TMS 402.

[BS] 1404.11.1 Exterior adhered masonry veneer. Exterior adhered masonry veneer shall be installed in accordance with Section 1404.11 and the manufacturer's instructions.

[BS] 1404.11.1.1 Water-resistive barriers. Water-resistive barriers shall be installed as required in Section 2510.6.

[BS] 1404.11.1.2 Flashing. Flashing shall comply with the applicable requirements of Sections 1404.4 and 1404.11.1.2.1.

[BS] 1404.11.1.2.1 Flashing at foundation. A corrosion-resistant screed or flashing of a minimum 0.019-inch (0.48 mm) or 26 gage galvanized or plastic with a minimum vertical attachment flange of $3^1/_2$ inches (89 mm) shall be installed to extend not less than 1 inch (25 mm) below the foundation plate line on exterior stud walls in accordance with Section 1404.4. The water-resistive barrier shall lap over the exterior of the attachment flange of the screed or flashing.

[BS] 1404.11.1.3 Clearances. On exterior stud walls, adhered masonry veneer shall be installed not less than 4 inches (102 mm) above the earth, or not less than 2 inches (51 mm) above paved areas, or not less than $^1/_2$ inch (12.7 mm) above exterior walking surfaces that are supported by the same foundation that supports the exterior wall.

[BS] 1404.11.1.4 Adhered masonry veneer installed with lath and mortar. Exterior adhered masonry veneer installed with lath and mortar shall comply with the following.

[BS] 1404.11.1.4.1 Lathing. Lathing shall comply with the requirements of Section 2510.

[BS] 1404.11.1.4.2 Scratch coat. A nominal $^1/_2$-inch-thick (12.7 mm) layer of mortar complying with the material requirements of Sections 2103 and 2512.2 shall be applied, encapsulating the lathing. The surface of this mortar shall be scored horizontally, resulting in a scratch coat.

[BS] 1404.11.1.4.3 Adhering veneer. The masonry veneer units shall be adhered to the mortar scratch coat with a nominal $^1/_2$-inch-thick (12.7 mm) setting bed of mortar complying with Sections 2103 and 2512.2 applied to create a full setting bed for the back of the masonry veneer units. The masonry veneer units shall be worked into the setting bed resulting in a nominal $^3/_8$-inch (9.5 mm) setting bed after the masonry veneer units are applied.

[BS] 1404.11.1.5 Adhered masonry veneer applied directly to masonry and concrete. Adhered masonry veneer applied directly to masonry or concrete shall comply with the applicable requirements of Section 1404.11 and with the requirements of Section 1404.11.1.4 or 2510.7.

[BS] 1404.11.1.6 Cold weather construction. Cold weather construction of adhered masonry veneer shall comply with the requirements of Sections 2104 and 2512.4.

[BS] 1404.11.1.7 Hot weather construction. Hot weather construction of adhered masonry veneer shall comply with the requirements of Section 2104.

[BS] 1404.11.2 Exterior adhered masonry veneers—porcelain tile. Adhered units weighing more than 3.5 pounds per square foot (0.17 kN/m^2) shall not exceed 48 inches (1219 mm) in any face dimension nor more than 9 square feet (0.8 m^2) in total face area and shall not weigh more than 6 pounds per square foot (0.29 kN/m^2). Adhered units weighing less than or equal to 3.5 pounds per square foot (0.17 kN/m^2) shall not exceed 72 inches (1829 mm) in any face dimension nor more than 17.5 square feet (1.6 m^2) in total face area. Porcelain tile shall be adhered to an approved backing system.

[BS] 1404.11.3 Interior adhered masonry veneers. Interior adhered masonry veneers shall have a maximum weight of 20 psf (0.958 kg/m^2) and shall be installed in accordance with Section 1404.11. Where the interior adhered masonry veneer is supported by wood construction, the supporting members shall be designed to limit deflection to $^1/_{600}$ of the span of the supporting members.

[BS] 1404.12 Metal veneers. Veneers of metal shall be fabricated from approved corrosion-resistant materials or shall be protected front and back with porcelain enamel, or otherwise be treated to render the metal resistant to corrosion. Such veneers shall be not less than 0.0149-inch (0.378 mm) nominal thickness sheet steel mounted on wood or metal furring strips or approved sheathing on light-frame construction.

[BS] 1404.12.1 Attachment. Exterior metal veneer shall be securely attached to the supporting masonry or framing members with corrosion-resistant fastenings, metal ties or by other approved devices or methods. The spacing of the fastenings or ties shall not exceed 24 inches (610 mm) either vertically or horizontally, but where units exceed 4 square feet (0.4 m^2) in area there shall be not less than four attachments per unit. The metal attachments shall have a cross-sectional area not less than provided by W 1.7 wire. Such attachments and their supports shall be designed and constructed to resist the wind loads as specified in Section 1609 for components and cladding.

1404.12.2 Weather protection. Metal supports for exterior metal veneer shall be protected by painting, galvanizing or by other equivalent coating or treatment. Wood studs, furring strips or other wood supports for exterior metal veneer shall be approved pressure-treated wood or protected as required in Section 1402.2. Joints and edges exposed to the weather shall be caulked with approved durable waterproofing material or by other approved means to prevent penetration of moisture.

1404.12.3 Backup. Masonry backup shall not be required for metal veneer unless required by the fire-resistance requirements of this code.

1404.12.4 Grounding. Grounding of metal veneers on buildings shall comply with the requirements of Chapter 27 of this code.

[BS] 1404.13 Glass veneer. The area of a single section of thin exterior structural glass veneer shall not exceed 10 square feet (0.93 m^2) where that section is not more than 15 feet (4572 mm) above the level of the sidewalk or grade level directly below, and shall not exceed 6 square feet (0.56 m^2) where it is more than 15 feet (4572 mm) above that level.

[BS] 1404.13.1 Length and height. The length or height of any section of thin exterior structural glass veneer shall not exceed 48 inches (1219 mm).

[BS] 1404.13.2 Thickness. The thickness of thin exterior structural glass veneer shall be not less than 0.344 inch (8.7 mm).

[BS] 1404.13.3 Application. Thin exterior structural glass veneer shall be set only after backing is thoroughly dry and after application of an approved bond coat uniformly over the entire surface of the backing so as to effectively seal the surface. Glass shall be set in place with an approved mastic cement in sufficient quantity so that not less than 50 percent of the area of each glass unit is directly bonded to the backing by mastic not less than $^1/_4$ inch (6.4 mm) thick and not more than $^5/_8$ inch (15.9 mm) thick. The bond coat and mastic shall be evaluated for compatibility and shall bond firmly together.

[BS] 1404.13.4 Installation at sidewalk level. Where glass extends to a sidewalk surface, each section shall rest in an approved metal molding, and be set not less than $^1/_4$ inch (6.4 mm) above the highest point of the sidewalk. The space between the molding and the sidewalk shall be thoroughly caulked and made watertight.

[BS] 1404.13.4.1 Installation above sidewalk level. Where thin exterior structural glass veneer is installed above the level of the top of a bulkhead facing, or at a level more than 36 inches (914 mm) above the sidewalk level, the mastic cement binding shall be supplemented with approved nonferrous metal shelf angles located in the horizontal joints in every course. Such shelf angles shall be not less than 0.0478-inch (1.2 mm) thick and not less than 2 inches (51 mm) long and shall be spaced at approved intervals, with not less than two angles for each glass unit. Shelf angles shall be secured to the wall or backing with expansion bolts, toggle bolts or by other approved methods.

[BS] 1404.13.5 Joints. Unless otherwise specifically approved by the building official, abutting edges of thin exterior structural glass veneer shall be ground square. Mitered joints shall not be used except where specifically approved for wide angles. Joints shall be uniformly buttered with an approved jointing compound and horizontal joints shall be held to not less than 0.063 inch (1.6 mm) by an approved nonrigid substance or device. Where thin exterior structural glass veneer abuts nonresilient material at sides or top, expansion joints not less than $^1/_4$ inch (6.4 mm) wide shall be provided.

[BS] 1404.13.6 Mechanical fastenings. Thin exterior structural glass veneer installed above the level of the heads of show windows and veneer installed more than 12 feet (3658 mm) above sidewalk level shall, in addition to the mastic cement and shelf angles, be held in place by the use of fastenings at each vertical or horizontal edge, or at the four corners of each glass unit. Fastenings shall be secured to the wall or backing with expansion bolts, toggle bolts or by other methods. Fastenings shall be so designed as to hold the glass veneer in a vertical plane independent of the mastic cement. Shelf angles providing both support and fastenings shall be permitted.

[BS] 1404.13.7 Flashing. Exposed edges of thin exterior structural glass veneer shall be flashed with overlapping corrosion-resistant metal flashing and caulked with a waterproof compound in a manner to effectively prevent the entrance of moisture between the glass veneer and the backing.

1404.14 Exterior windows and doors. Windows and doors installed in exterior walls shall conform to the testing and performance requirements of Section 1709.5.

1404.14.1 Installation. Windows and doors shall be installed in accordance with approved manufacturer's instructions. Fastener size and spacing shall be provided in such instructions and shall be calculated based on maximum loads and spacing used in the tests.

[BS] 1404.15 Vinyl siding and insulated vinyl siding. Vinyl siding and insulated vinyl siding conforming to the requirements of this section and complying with ASTM D3679 and ASTM D7793, respectively, shall be permitted on exterior walls where the design wind pressure determined in accordance with Section 1609 does not exceed 30 pounds per square foot (1.44 kN/m^2). Where the design wind pressure exceeds 30 pounds per square foot (1.44 kN/m^2), tests or calculations indicating compliance with Chapter 16 shall be submitted.

[BS] 1404.15.1 Application. The siding shall be applied over sheathing or materials listed in Section 2304.6. Siding shall be applied to conform to the water-resistive barrier requirements in Section 1402. Siding and accessories shall be installed in accordance with the approved manufacturer's instructions.

[BS] 1404.15.1.1 Fasteners and fastener penetration for wood construction. Unless otherwise specified in the approved manufacturer's instructions, nails used to fasten the siding and accessories shall be corrosion resistant and have not less than a 0.313-inch (7.9 mm) head diameter and $^1/_8$-inch (3.18 mm) shank diameter. The penetration into nailable substrate shall be not less than $1^1/_4$ inches (32 mm).

[BS] 1404.15.1.2 Fasteners and fastener penetration for cold-formed steel light-fame construction. For cold-formed steel light-frame construction, corrosion-resistant fasteners shall be used. Screw fasteners shall penetrate through the steel with not fewer than three exposed threads. Other fasteners shall be installed in accordance with the approved construction documents and manufacturer's instructions.

[BS] 1404.15.1.3 Fastener spacing. Unless specified otherwise by the approved manufacturer's instructions, fasteners shall be installed in the middle third of the slots of the nail hem and spacing between fasteners shall be not greater than 16 inches (406 mm) for horizontal siding and 12 inches (305 mm) for vertical siding.

[BS] 1404.15.2 Installation over foam plastic insulating sheathing. Where vinyl siding or insulated vinyl siding is installed over foam plastic insulating sheathing, the vinyl siding or insulated vinyl siding shall comply with Section 1404.15 and shall have a wind load design pressure rating in accordance with Table 1404.15.2.

Exceptions:

1. Where the foam plastic insulating sheathing is applied directly over wood structural panels, fiberboard, gypsum sheathing or other approved backing capable of independently resisting the design wind pressure, the vinyl siding or insulated vinyl siding shall be installed in accordance with Section 1404.15.1.
2. Where the vinyl siding or insulated vinyl siding manufacturer's product specifications provide an approved wind load design pressure rating for installation over foam plastic insulating sheathing, use of this wind load design pressure rating shall be permitted and the siding shall be installed in accordance with the manufacturer's installation instructions.
3. Where the foam plastic insulating sheathing and its attachment has a design wind pressure resistance complying with Sections 1609 and 2603.10, the vinyl siding or insulated vinyl siding shall be installed in accordance with Section 1404.15.1.

[BS] TABLE 1404.15.2—REQUIRED MINIMUM WIND LOAD DESIGN PRESSURE RATING FOR VINYL SIDING INSTALLED OVER FOAM PLASTIC SHEATHING ALONE

ULTIMATE DESIGN WIND SPEED (MPH)	ADJUSTED MINIMUM DESIGN WIND PRESSURE (ASD) (PSF)[a, b]					
	Case 1: With interior gypsum wallboard[c]			Case 2: Without interior gypsum wallboard[c]		
	Exposure			Exposure		
	B	C	D	B	C	D
≤ 95	-30.0	-33.2	-39.4	-33.9	-47.4	-56.2
100	-30.0	-36.8	-43.6	-37.2	-52.5	-62.2
105	-30.0	-40.5	-48.1	-41.4	-57.9	-68.6
110	-31.8	-44.5	-52.8	-45.4	-63.5	-75.3
115	-35.5	-49.7	-59.0	-50.7	-71.0	-84.2
120	-37.4	-52.4	-62.1	-53.4	-74.8	-88.6
130	-44.9	-62.8	-74.5	-64.1	-89.7	-106
> 130	See Note d					

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 square foot = 0.0929 m, 1 mile per hour = 0.447 m/s, 1 pound per square foot = 0.0479 kPa.

a. Linear interpolation is permitted.

b. The table values are based on a maximum 30-foot mean roof height, an effective wind area of 10 square feet in Wall Zone 5 (corner), and the ASD design component and cladding wind pressure determined in accordance with Section 1609 multiplied by the following adjustment factors: 1.87 (Case 1) and 2.67 (Case 2).

c. Gypsum wallboard, gypsum panel product or equivalent.

d. For the indicated wind speed condition and where foam sheathing is the only sheathing on the exterior of a frame wall with vinyl siding, the wall assembly shall be capable of resisting an impact without puncture at least equivalent to that of a wood frame wall with minimum $^{7}/_{16}$-inch OSB sheathing as tested in accordance with ASTM E1886. The vinyl siding shall comply with an adjusted design wind pressure requirement in accordance with Note b, using an adjustment factor of 2.67.

[BS] 1404.16 Cement plaster. Cement plaster applied to exterior walls shall conform to the requirements specified in Chapter 25.

[BS] 1404.17 Fiber-cement siding. Fiber-cement siding complying with Section 1403.9 shall be permitted on exterior walls of Types I, II, III, IV and V construction for wind pressure resistance or basic wind speed exposures as indicated by the manufacturer's listing and label and approved installation instructions. Where specified, the siding shall be installed over sheathing or materials listed in Section 2304.6 and shall be installed to conform to the water-resistive barrier requirements in Section 1402. Siding and accessories shall be installed in accordance with approved manufacturer's instructions. Unless otherwise specified in the approved manufacturer's instructions, nails used to fasten the siding to wood studs shall be corrosion-resistant round head smooth shank and shall be long enough to penetrate the studs not less than 1 inch (25 mm). For cold-formed steel light-frame construction, corrosion-resistant fasteners shall be used. Screw fasteners shall penetrate the cold-formed steel framing not fewer than three exposed full threads. Other fasteners shall be installed in accordance with the approved construction documents and manufacturer's instructions. *

[BS] 1404.17.1 Panel siding. Fiber-cement panels shall comply with the requirements of ASTM C1186, Type A, minimum Grade II (or ISO 8336, Category A, minimum Class 2). Panels shall be installed with the long dimension either parallel or perpendicular to framing. Vertical and horizontal joints shall occur over framing members and shall be protected with caulking, with battens or flashing, or be vertical or horizontal shiplap or otherwise designed to comply with Section 1402.2. Panel siding shall be installed with fasteners in accordance with the approved manufacturer's instructions.

[BS] 1404.17.2 Lap siding. Fiber-cement lap siding having a maximum width of 12 inches (305 mm) shall comply with the requirements of ASTM C1186, Type A, minimum Grade II (or ISO 8336, Category A, minimum Class 2). Lap siding shall be lapped not less than $1^{1}/_{4}$ inches (32 mm) and lap siding not having tongue-and-groove end joints shall have the ends protected with caulking, covered with an H-section joint cover, located over a strip of flashing or shall be otherwise designed to comply with Section 1402.2. Lap siding courses shall be installed with the fastener heads exposed or concealed in accordance with the approved manufacturer's instructions.

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* **[BS] 1404.18 Polypropylene siding.** Polypropylene siding conforming to the requirements of this section and complying with Section 1403.11 shall be limited to exterior walls located in areas where the basic wind speed, V, specified in Chapter 16 does not exceed 100 miles per hour (45 m/s) and the building height is less than or equal to 40 feet (12 192 mm) in Exposure C. Where construction is located in areas where the basic wind speed, V, exceeds 100 miles per hour (45 m/s), or building heights are in excess of 40 feet (12 192 mm), tests or calculations indicating compliance with Chapter 16 shall be submitted.

[BS] 1404.18.1 Installation. Polypropylene siding and accessories shall be installed over and attached to wood structural panel sheathing with nailable substrate not less than $^{7}/_{16}$ inch (11.1 mm) in thickness or other substrate suitable for mechanical fasteners in accordance with the approved manufacturer's instructions.

[BS] 1404.18.2 Fastener requirements. Unless otherwise specified in the approved manufacturer's instructions, nails shall be corrosion resistant, with a minimum 0.120-inch (3 mm) shank and a minimum 0.313-inch (8 mm) head diameter. Nails shall be not less than $1^{1}/_{4}$ inches (32 mm) long or as necessary to penetrate sheathing or nailable substrate not less than $^{3}/_{4}$ inch (19.1 mm). Where the nail fully penetrates the sheathing or nailable substrate, the end of the fastener shall extend not less than $^{1}/_{4}$ inch (6.4 mm) beyond the opposite face of the sheathing or nailable substrate. Spacing of fasteners shall be installed in accordance with the approved manufacturer's instructions.

[BS] 1404.19 Fiber-mat reinforced cementitious backer units. Fiber-mat reinforced cementitious backer units shall be permitted on exterior walls and shall meet the requirements of Section 1404.19.1.

[BS] 1404.19.1 Installation. Installation of fiber-mat reinforced cementitious backer units used as an exterior substrate for the application of exterior finish materials shall be in accordance with backer unit manufacturer's installation instructions. Panels shall be installed using corrosion-resistant fasteners. Finish materials shall be installed in accordance with approved finish material manufacturer's instructions.

SECTION 1405—COMBUSTIBLE MATERIALS ON THE EXTERIOR SIDE OF EXTERIOR WALLS

1405.1 Combustible exterior wall coverings. Combustible exterior wall coverings shall comply with this section.

Exception: Plastics complying with Chapter 26.

1405.1.1 Types I, II, III and IV-HT construction. On buildings of Types I, II, III and IV-HT construction, exterior wall coverings shall be permitted to be constructed of combustible materials, complying with the following limitations:

1. Combustible exterior wall coverings shall not exceed 10 percent of an exterior wall surface area where the fire separation distance is 5 feet (1524 mm) or less.
2. Combustible exterior wall coverings shall be limited to 40 feet (12 192 mm) in height above grade plane.

   Exceptions:

   1. *Metal composite material (MCM) systems* complying with Section 1406.
   2. *Exterior insulation and finish systems* (EIFS) complying with Section 1407.
   3. *High-pressure decorative exterior-grade compact laminate (HPL) systems* complying with Section 1408.
   4. Exterior wall coverings containing foam plastic insulation complying with Section 2603.
3. Combustible exterior wall coverings constructed of fire-retardant-treated wood complying with Section 2303.2 for exterior installation shall not be limited in wall surface area where the fire separation distance is 5 feet (1524 mm) or less and shall be permitted up to 60 feet (18 288 mm) in height above grade plane regardless of the fire separation distance.
4. Wood veneers shall comply with Section 1404.6.

1405.1.1.1 Ignition resistance. Where permitted by Section 1405.1.1, combustible exterior wall coverings shall be tested in accordance with NFPA 268.

Exceptions:

1. Wood or wood-based products.
2. Other combustible materials covered with an exterior weather covering, other than vinyl sidings, included in and complying with the thickness requirements of Table 1404.2.
3. Aluminum having a minimum thickness of 0.019 inch (0.48 mm).

1405.1.1.1.1 Fire separation 5 feet or less. Where installed on exterior walls having a fire separation distance of 5 feet (1524 mm) or less, combustible exterior wall coverings shall not exhibit sustained flaming as defined in NFPA 268.

1405.1.1.1.2 Fire separation greater than 5 feet. For fire separation distances greater than 5 feet (1524 mm), any exterior wall covering shall be permitted that has been exposed to a reduced level of incident radiant heat flux in accordance with the NFPA 268 test method without exhibiting sustained flaming. The minimum fire separation distance required for the exterior wall covering shall be determined from Table 1405.1.1.1.2 based on the maximum tolerable level of incident radiant heat flux that does not cause sustained flaming of the exterior wall covering.

TABLE 1405.1.1.1.2—MINIMUM FIRE SEPARATION FOR COMBUSTIBLE EXTERIOR WALL COVERINGS	
FIRE SEPARATION DISTANCE (feet)	**TOLERABLE LEVEL INCIDENT RADIANT HEAT ENERGY (kW/m^2)**
5	12.5
6	11.8
7	11.0
8	10.3
9	9.6
10	8.9
11	8.3
12	7.7
13	7.2
14	6.7
15	6.3
16	5.9
17	5.5
18	5.2
19	4.9
20	4.6
21	4.4
22	4.1
23	3.9
24	3.7
25	3.5
For SI: 1 foot = 304.8 mm, 1 $Btu/H^2 \times °F = 0.0057 kW/m^2 \times K$.	

1405.1.2 Location. Combustible exterior wall coverings located along the top of exterior walls shall be completely backed up by the exterior wall and shall not extend over or above the top of the exterior wall.

1405.1.3 Fireblocking. Where the combustible exterior wall covering is furred out from the exterior wall and forms a solid surface, the distance between the back of the exterior wall covering and the exterior wall shall not exceed $1^5/_8$ inches (41 mm). The concealed space thereby created shall be fireblocked in accordance with Section 718.

Exception: The distance between the back of the exterior wall covering and the exterior wall shall be permitted to exceed $1^5/_8$ inches (41 mm) where the concealed space is not required to be fireblocked by Section 718.

SECTION 1406—METAL COMPOSITE MATERIAL (MCM)

1406.1 General. The provisions of this section shall govern the materials, construction and quality of metal composite material (MCM) for use as exterior wall coverings in addition to other applicable requirements of Chapters 14 and 16.

1406.2 Exterior wall covering. MCM used as exterior wall covering or as elements of balconies and similar projections and bay and oriel windows to provide cladding or weather resistance shall comply with Sections 1406.4 through 1406.13.

1406.3 Architectural trim and embellishments. MCM used as architectural trim or embellishments shall comply with Sections 1406.7 through 1406.13.

[BS] 1406.4 Structural design. MCM systems shall be designed and constructed to resist wind loads as required by Chapter 16 for components and cladding.

1406.5 Approval. Results of approved tests or an engineering analysis shall be submitted to the building official to verify compliance with the requirements of Chapter 16 for wind loads.

1406.6 Weather resistance. MCM systems shall comply with Section 1402 and shall be designed and constructed to resist wind and rain in accordance with this section and the manufacturer's installation instructions.

1406.7 Durability. MCM systems shall be constructed of approved materials that maintain the performance characteristics required in Section 1406 for the duration of use.

1406.8 Fire-resistance rating. Where MCM systems are used on exterior walls required to have a fire-resistance rating in accordance with Section 705, evidence shall be submitted to the building official that the required fire-resistance rating is maintained.

Exception: MCM systems that are part of an exterior wall assembly not containing foam plastic insulation and are installed on the outer surface of a fire-resistance-rated exterior wall in a manner such that the attachments do not penetrate through the entire exterior wall assembly, shall not be required to comply with this section.

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1406.9 Surface-burning characteristics. Unless otherwise specified, MCM shall have a flame spread index of 75 or less and a smoke-developed index of 450 or less when tested in the maximum thickness intended for use in accordance with ASTM E84 or UL 723.

1406.10 Types I, II, III and IV construction. Where installed on buildings of Types I, II, III and IV construction, metal composite material (MCM) shall comply with Sections 1406.10.1 and 1406.10.2 for installations up to 40 feet (12 192 mm) above grade plane. Where installed on buildings of Type I, II, III and IV construction, MCMs and MCM systems shall comply with Sections 1406.10.1 through 1406.10.3, for installations greater than 40 feet (12 192 mm) above grade plane.

1406.10.1 Surface-burning characteristics. MCM shall have a flame spread index of not more than 25 and a smoke-developed index of not more than 450 when tested in the maximum thickness intended for use in accordance with ASTM E84 or UL 723.

1406.10.2 Thermal barriers. MCM shall be separated from the interior of a building by an approved thermal barrier consisting of $^1/_2$-inch (12.7 mm) gypsum wallboard or material that is tested in accordance with and meets the acceptance criteria of both the Temperature Transmission Fire Test and the Integrity Fire Test of NFPA 275.

Exceptions:

1. The MCM system is specifically approved based on tests conducted in accordance with NFPA 286 and with the acceptance criteria of Section 803.1.1.1, UL 1040 or UL 1715. Such testing shall be performed with the MCM in the maximum thickness intended for use. The MCM system shall include seams, joints and other typical details used in the installation and shall be tested in the manner intended for use.
2. The MCM is used as elements of balconies and similar projections, architectural trim or embellishments.

1406.10.3 Full-scale tests. The MCM system shall be tested in accordance with, and comply with, the acceptance criteria of NFPA 285. Such testing shall be performed on the MCM system with the MCM in the maximum thickness intended for use.

1406.11 Type V construction. MCM shall be permitted to be installed on buildings of Type V construction.

1406.12 Foam plastic insulation. Where MCM systems are included in an exterior wall assembly containing foam plastic insulation, the exterior wall assembly shall also comply with the requirements of Section 2603.

1406.13 Labeling. MCM shall be labeled in accordance with Section 1703.5.

SECTION 1407—EXTERIOR INSULATION AND FINISH SYSTEMS (EIFS)

1407.1 General. The provisions of this section shall govern the materials, construction and quality of exterior insulation and finish systems (EIFS) for use as exterior wall coverings in addition to other applicable requirements of Chapters 7, 14, 16, 17 and 26.

1407.2 Performance characteristics. EIFS shall be constructed such that it meets the performance characteristics required in ASTM E2568.

[BS] 1407.3 Structural design. The underlying structural framing and substrate shall be designed and constructed to resist loads as required by Chapter 16.

1407.4 Weather resistance. EIFS shall comply with Section 1402 and shall be designed and constructed to resist wind and rain in accordance with this section and the manufacturer's application instructions.

1407.4.1 EIFS with drainage. EIFS with drainage shall have an average minimum drainage efficiency of 90 percent when tested in accordance the requirements of ASTM E2273 and is required on framed walls of Type V construction, Group R1, R2, R3 and R4 occupancies.

1407.4.1.1 Water-resistive barrier. For EIFS with drainage, the water-resistive barrier shall comply with Section 1403.2 or ASTM E2570.

1407.5 Exterior walls of buildings of any height. Exterior wall assemblies containing an EIFS exterior wall covering shall comply with Section 2603.5.

1407.6 Installation. Installation of the EIFS and EIFS with drainage shall be in accordance with the EIFS manufacturer's instructions.

1407.7 Special inspections. EIFS installations shall comply with the provisions of Sections 1704.2 and 1705.17.

SECTION 1408—HIGH-PRESSURE DECORATIVE EXTERIOR-GRADE COMPACT LAMINATES (HPL)

1408.1 General. The provisions of this section shall govern the materials, construction and quality of High-Pressure Decorative Exterior-Grade Compact Laminates (HPL) for use as exterior wall coverings in addition to other applicable requirements of Chapters 14 and 16.

1408.2 Exterior wall covering. HPL used as exterior wall covering or as elements of balconies and similar projections and bay and oriel windows to provide cladding or weather resistance shall comply with Sections 1408.4 through 1408.14.

1408.3 Architectural trim and embellishments. HPL used as architectural trim or embellishments shall comply with Sections 1408.7 through 1408.14.

[BS] 1408.4 Structural design. HPL systems shall be designed and constructed to resist wind loads as required by Chapter 16 for components and cladding.

1408.5 Approval. Results of approved tests or an engineering analysis shall be submitted to the building official to verify compliance with the requirements of Chapter 16 for wind loads.

1408.6 Weather resistance. HPL systems shall comply with Section 1402 and shall be designed and constructed to resist wind and rain in accordance with this section and the manufacturer's instructions.

1408.7 Durability. HPL systems shall be constructed of approved materials that maintain the performance characteristics required in Section 1408 for the duration of use.

1408.8 Fire-resistance rating. Where HPL systems are used on exterior walls required to have a fire-resistance rating in accordance with Section 705, evidence shall be submitted to the building official that the required fire-resistance rating is maintained.

Exception: HPL systems not containing foam plastic insulation, which are installed on the outer surface of a fire-resistance-rated exterior wall in a manner such that the attachments do not penetrate through the entire exterior wall assembly, shall not be required to comply with this section.

1408.9 Surface-burning characteristics. Unless otherwise specified, HPL shall have a flame spread index of 75 or less and a smoke-developed index of 450 or less when tested in the minimum and maximum thicknesses intended for use in accordance with ASTM E84 or UL 723.

1408.10 Types I, II, III and IV construction. Where installed on buildings of Types I, II, III and IV construction, HPL systems shall comply with Sections 1408.10.1 through 1408.10.4, or Section 1408.11.

1408.10.1 Surface-burning characteristics. HPL shall have a flame spread index of not more than 25 and a smoke-developed index of not more than 450 when tested in the minimum and maximum thicknesses intended for use in accordance with ASTM E84 or UL 723.

1408.10.2 Thermal barriers. HPL shall be separated from the interior of a building by an approved thermal barrier consisting of $^1/_2$-inch (12.7 mm) gypsum wallboard or a material that is tested in accordance with and meets the acceptance criteria of both the Temperature Transmission Fire Test and the Integrity Fire Test of NFPA 275.

1408.10.3 Thermal barrier not required. The thermal barrier specified for HPL in Section 1408.10.2 is not required where:

1. The HPL system is specifically approved based on tests conducted in accordance with NFPA 286, and with the acceptance criteria of Section 803.1.1.1, or with UL 1040 or UL 1715. Such testing shall be performed with the HPL in the minimum and maximum thicknesses intended for use. The HPL system shall include seams, joints and other typical details used in the installation and shall be tested in the manner intended for use.
2. The HPL is used as elements of balconies and similar projections, architectural trim or embellishments.

1408.10.4 Full-scale tests. The HPL system shall be tested in accordance with, and comply with, the acceptance criteria of NFPA 285. Such testing shall be performed on the HPL system with the HPL in the minimum and maximum thicknesses intended for use.

1408.11 Alternate conditions. HPL and HPL systems shall not be required to comply with Sections 1408.10.1 through 1408.10.4 provided that such systems comply with Section 1408.11.1.

1408.11.1 Installations up to 40 feet in height. HPL shall be permitted to be installed up to 40 feet (12 190 mm) in height above grade plane where installed in accordance with Section 1408.11.1.1 or 1408.11.1.2.

1408.11.1.1 Fire separation distance of 5 feet or less. Where the fire separation distance is 5 feet (1524 mm) or less, the area of HPL shall not exceed 10 percent of the exterior wall surface.

1408.11.1.2 Fire separation distance greater than 5 feet. Where the fire separation distance is greater than 5 feet (1524 mm), the area of exterior wall surface coverage using HPL shall not be limited.

1408.12 Type V construction. HPL shall be permitted to be installed on buildings of Type V construction.

1408.13 Foam plastic insulation. HPL systems containing foam plastic insulation shall comply with the requirements of Section 2603.

1408.14 Labeling. HPL shall be labeled in accordance with Section 1703.5.

SECTION 1409—INSULATED METAL PANEL (IMP)

1409.1 General. The provisions of this section, in addition to the other applicable requirements of this chapter and Chapter 16, shall govern the materials, construction and quality of insulated metal panels (IMP) for use as exterior walls and exterior wall coverings.

1409.2 Structural design. Structural design of IMP systems shall be in accordance with this section.

1409.2.1 IMP systems used as exterior walls. IMP systems used as exterior walls shall be designed and constructed to resist design loads in accordance with applicable provisions of Chapter 16.

1409.2.2 IMP systems used as exterior wall coverings. IMP systems used as exterior wall covering systems shall be designed and constructed to resist wind loads as required by Section 1609.

1409.2.3 Approval. Results of approved tests or engineering analyses shall be submitted to the building official to verify compliance with the applicable requirements of Chapter 16.

1409.3 Weather resistance. IMP systems shall comply with Section 1402 and shall be designed and constructed to resist wind and rain in accordance with this section and the manufacturer's installation instructions.

1409.4 Durability. IMP systems shall be constructed of approved materials that maintain the performance characteristics required in Section 1402 for the duration of use.

1409.5 Fire-resistance rating. Evidence of the required fire-resistance rating of IMP systems shall be in accordance with this section.

1409.5.1 IMP used as exterior walls. In all types of construction where IMP systems are used as exterior walls required to have a fire-resistance rating in accordance with Section 705, evidence shall be submitted to the building official that the wall achieves the required fire-resistance rating.

1409.5.2 IMP used as exterior wall coverings. In all types of construction where IMP systems are used as exterior wall coverings on exterior walls required to have a fire-resistance rating in accordance with Section 705, evidence shall be submitted to the building official that the required fire-resistance rating is maintained.

Exception: IMP systems not containing combustible insulation, which are installed on the outer surface of a fire-resistance rated exterior wall in a manner such that the attachments do not penetrate to the entire exterior wall assembly.

1409.6 IMP systems with noncombustible core insulation. IMP with noncombustible core insulation shall comply with Sections 1409.1 through 1409.5. Combustibility shall be determined in accordance with Section 703.3.

1409.7 IMP systems with combustible core insulation. IMP systems with combustible core insulation shall comply with Sections 1409.1 through 1409.5 and this section. Combustibility shall be determined in accordance with Section 703.3.

1409.7.1 Surface-burning characteristics. Unless otherwise specified in this section, a combustible core 4 inches (102 mm) or less in thickness shall have a flame spread index of 75 or less and a smoke-developed index of 450 or less when tested in the maximum thickness intended for use in accordance with ASTM E84 or UL 723. For thicknesses greater than 4 inches (102 mm), the combustible core shall have a flame spread index of 75 or less and a smoke-developed index of 450 or less at 4 inches (102 mm) in thickness and the IMP approved based on testing in accordance with Section 1409.7.2.2 at the maximum IMP thickness intended for use.

1409.7.1.1 Foam plastic core. For IMP having a core insulation composed of foam plastic, the insulation core shall comply with Section 2603.3.

1409.7.2 Thermal barrier. Unless otherwise specified in this section, IMP with a combustible core shall be separated from the interior of a building by an approved thermal barrier consisting of $^1/_2$-inch (12.7 mm) gypsum wallboard or a material that is tested in accordance with and meets the acceptance criteria of both the Temperature Transmission Fire Test and the Integrity Fire Test of NFPA 275.

1409.7.2.1 Foam plastic core. For IMP having a foam plastic core, use with the thermal barrier prescribed in Section 1409.7.2 shall be in accordance with Section 2603.4 unless special approval is obtained on the basis of Section 2603.9.

1409.7.2.2 Special approval. The thermal barrier specified in Section 1409.7.2 is not required where IMP is specifically approved based on tests conducted in accordance with, but not limited to, NFPA 286 (with the acceptance criteria of Section 803.1.1.1), FM 4880 or UL 1715. Such testing shall be performed with the IMP in a configuration related to the actual end-use and at the maximum thickness intended for use, and shall include seams, factory joints, sealants and other typical details intended for use.

1409.7.3 Type I, II, III, and IV construction. Where used as exterior walls or as exterior wall coverings on buildings of Type I, II, III and IV construction, IMP systems shall comply with this section as follows:

1. IMP having a foam plastic core shall comply with Section 2603.5.
2. IMP having combustible core other than foam plastic shall comply with Sections 1409.7.3.1 through 1409.7.3.4.

1409.7.3.1 Surface-burning characteristics. A combustible core not greater than 4 inches (102 mm) in thickness shall have a flame spread index of 25 or less and a smoke-developed index of 450 or less when tested in the maximum thickness intended for use in accordance with ASTM E84 or UL 723. For thicknesses greater than 4 inches (102 mm) the combustible core shall have a flame spread index of 75 or less and a smoke-developed index of 450 or less at 4 inches (102 mm) in thickness and the IMP approved based on testing in accordance with Section 1409.7.2.2 at the maximum IMP thickness intended for use.

1409.7.3.2 Thermal barrier. IMP shall be separated from the interior of a building by an approved thermal barrier in accordance with Section 1409.7.2.

1409.7.3.3 Vertical and lateral flame propagation. IMP installations greater than 40 feet (12 192 mm) in height above grade plane shall be tested in accordance with and comply with the acceptance criteria of NFPA 285. Such testing shall be performed on the exterior wall assembly and with the IMP in the maximum thickness intended for use.

1409.7.3.4 Ignition. IMP installations shall not exhibit sustained flaming where tested in accordance with NFPA 268. Where a material is intended to be installed in more than one thickness, tests of the minimum and maximum thicknesses intended for use shall be performed.

Exceptions:

Assemblies protected on the outside with one of the following:

1. A thermal barrier complying with Section 1409.7.2.
2. Concrete or masonry not less than 1 inch (25 mm) in thickness.
3. Glass-fiber-reinforced concrete panels not less than $^3/_8$ inch (9.5 mm) in thickness.
4. Metal-faced panels having outer facings not less in thickness than 0.019 inch (0.48 mm) aluminum or 0.016 inch (0.41 mm) corrosion-resistant steel.
5. Stucco not less than $^7/_8$ inch (22.2 mm) in thickness, complying with Section 2510.
6. Fiber-cement lap, panel or shingle siding complying with Section 1404.17 and Section 1404.17.1 or 1404.17.2, and having a thickness of not less than $^1/_4$ inch (6.4 mm).

1409.8 Type V construction. IMP shall be permitted for use in Type V construction.

1409.9 Labeling. Unless otherwise specified, the edge or face of each IMP or package shall bear the label of an approved agency. The label shall contain the manufacturer's or distributor's identification, model number, serial number or definitive information describing the product or materials' performance characteristics and approved agency's identification.

1409.9.1 Foam plastic core. IMP having a foam plastic core shall be labeled in accordance with Sections 2603.2 and 2603.5.6, as applicable.

SECTION 1410—PLASTIC COMPOSITE DECKING

[BS] 1410.1 Plastic composite decking. Exterior deck boards, stair treads, handrails and guards constructed of plastic composites, including plastic lumber, shall comply with Section 2612.

SECTION 1411—BUILDING-INTEGRATED PHOTOVOLTAIC (BIPV) SYSTEMS FOR EXTERIOR WALL COVERINGS AND FENESTRATION

1411.1 Listing required. In addition to complying with other provisions of this code, building-integrated photovoltaic (BIPV) systems used as exterior wall coverings or fenestration shall be listed and labeled in accordance with UL 1703 or both UL 61730-1 and UL 61730-2.

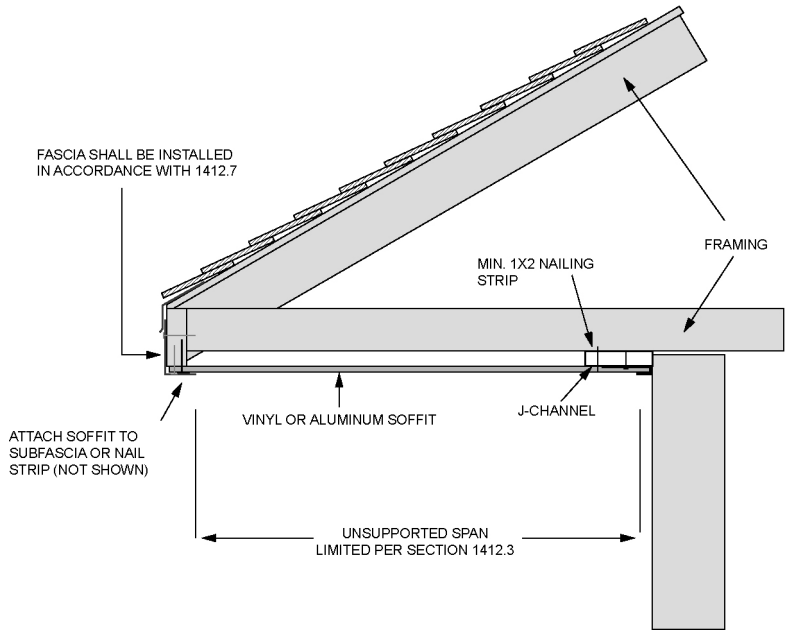
SECTION 1412—SOFFITS AND FASCIAS AT ROOF OVERHANGS

1412.1 General. Soffits and fascias at roof overhangs shall be designed and constructed in accordance with the applicable provisions of this section.

1412.2 General wind requirements. Soffits and fascias shall be capable of resisting the component and cladding loads for walls determined in accordance with Chapter 16 using an effective wind area of 10 square feet (0.93 m^2).

1412.3 Vinyl and aluminum soffit panels. Vinyl and aluminum soffit panels shall comply with Section 1412.2, shall be installed using fasteners specified by the manufacturer and shall be fastened at both ends to a supporting component such as a nailing strip, fascia or subfascia component in accordance with Figure 1412.3(1). Where the unsupported span of soffit panels is greater than 12 inches (406 mm) and the design wind pressure is greater than 30 psf (1.44 kN/m^2) or the unsupported span of soffit panels is greater than 16 inches (406 mm) and the wind pressure is 30 psf (1.44 kN/m^2) or less, intermediate nailing strips shall be provided in accordance with Figure 1412.3(2). Vinyl and aluminum soffit panels shall be installed in accordance with the manufacturer's installation instructions.

FIGURE 1412.3(1)—SINGLE-SPAN VINYL OR ALUMINUM SOFFIT PANEL SUPPORT


FASCIA SHALL BE INSTALLED IN ACCORDANCE WITH 1412.7
FRAMING
MIN. 1X2 NAILING STRIP
VINYL OR ALUMINUM SOFFIT
J-CHANNEL
ATTACH SOFFIT TO SUBFASCIA OR NAIL STRIP (NOT SHOWN)
UNSUPPORTED SPAN LIMITED PER SECTION 1412.3

For SI: 1 inch = 25.4 mm.

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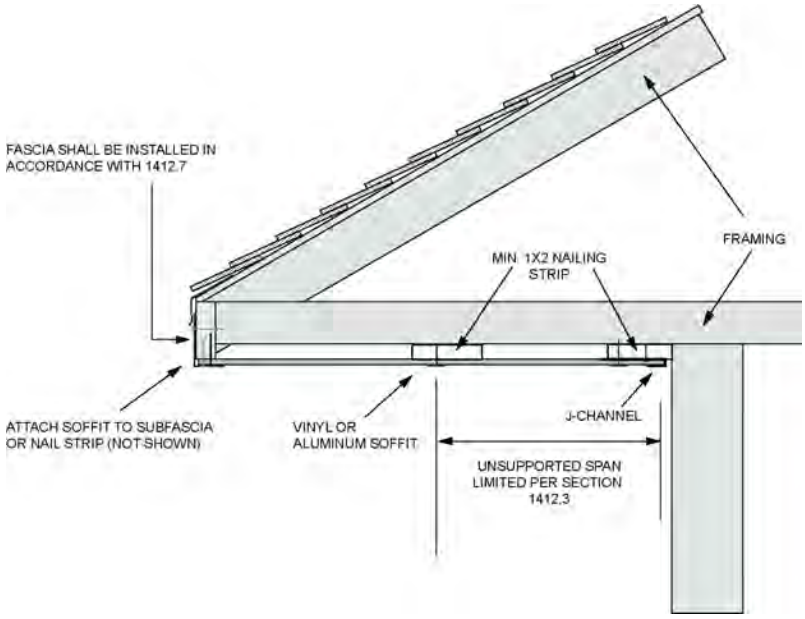
FIGURE 1412.3(2)—DOUBLE-SPAN VINYL OR ALUMINUM SOFFIT PANEL SUPPORT


FASCIA SHALL BE INSTALLED IN ACCORDANCE WITH 1412.7
FRAMING
MIN. 1X2 NAILING STRIP
ATTACH SOFFIT TO SUBFASCIA OR NAIL STRIP (NOT SHOWN)
VINYL OR ALUMINUM SOFFIT
J-CHANNEL
UNSUPPORTED SPAN LIMITED PER SECTION 1412.3

For SI: 1 inch = 25.4 mm.

1412.4 Fiber-cement soffit panels. Fiber-cement soffit panels shall comply with Section 1412.2, shall be not less than $^{1}/_{4}$ inch (6.4 mm) in thickness and shall comply with the requirements of ASTM C1186, Type A, minimum Grade II, or ISO 8336, Category A, minimum Class 2. Panel joints shall occur over framing or over wood structural panel sheathing. Soffit panels shall be installed with spans and fasteners in accordance with the manufacturer's installation instructions.

1412.5 Hardboard soffit panels. Hardboard soffit panels shall comply with Section 1412.2 and shall be not less than $^{7}/_{16}$ inch (11.11 mm) in thickness and fastened to framing or nailing strips to meet the required design wind pressures. Where the design wind pressure is 30 pounds per square foot (1.44 kN/m²) or less, hardboard soffit panels are permitted to be attached to wood framing with $2^{1}/_{2}$-inch by 0.113-inch (64 mm by 2.9 mm) siding nails spaced not more than 6 inches (152 mm) on center at panel edges and 12 inches (305 mm) on center at intermediate supports. Soffit panels shall be installed with spans and fasteners in accordance with the manufacturer's installation instructions.

1412.6 Wood structural panel soffit. Wood structural panel soffits shall comply with Section 1412.2 and shall have minimum panel performance category of $^{3}/_{8}$. Wood structural panel soffits are permitted to be attached to wood framing in accordance with Table 1412.6.

TABLE 1412.6—PRESCRIPTIVE ALTERNATE FOR WOOD STRUCTURAL PANEL SOFFIT[b, c, d, e]

MAXIMUM DESIGN PRESSURE (± psf)	MINIMUM PANEL SPAN RATING	MINIMUM PANEL PERFORMANCE CATEGORY	NAIL TYPE AND SIZE	FASTENER[a] SPACING ALONG EDGES AND INTERMEDIATE SUPPORTS	
				Galvanized steel	Stainless steel
30	24/0	3/8	6d box (2″ × 0.099″ × 0.266″ head diameter)	6[f]	4
40	24/0	3/8	6d box (2″ × 0.099″ × 0.266″ head diameter)	6	4
50	24/0	3/8	6d box (2″ × 0.099″ × 0.266″ head diameter)	4	4
			8d common ($2^{1}/_{2}$″ × 0.131″ × 0.281″ head diameter)	6	6
60	24/0	3/8	6d box (2″ × 0.099″ × 0.266″ head diameter)	4	3
			8d common ($2^{1}/_{2}$″ × 0.131″ × 0.281″ head diameter)	6	4
70	24/16	7/16	8d common ($2^{1}/_{2}$″ × 0.131″ × 0.281″ head diameter)	4	4
			10d box (3″ × 0.128″ × 0.312″ head diameter)	6	4

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TABLE 1412.6—PRESCRIPTIVE ALTERNATE FOR WOOD STRUCTURAL PANEL SOFFIT[b, c, d, e]—continued

MAXIMUM DESIGN PRESSURE (± psf)	MINIMUM PANEL SPAN RATING	MINIMUM PANEL PERFORMANCE CATEGORY	NAIL TYPE AND SIZE	FASTENER[a] SPACING ALONG EDGES AND INTERMEDIATE SUPPORTS	
				Galvanized steel	Stainless steel
80	24/16	7/16	8d common ($2^1/_2$″ × 0.131″ × 0.281″ head diameter)	4	4
			10d box (3″ × 0.128″ × 0.312″ head diameter)	6	4
90	32/16	15/32	8d common ($2^1/_2$″ × 0.131″ × 0.281″ head diameter)	4	3
			10d box (3″ × 0.128″ × 0.312″ head diameter)	6	4

For SI: 1 inch = 25.4 mm.

a. Fasteners shall comply with Section 1412.6.

b. Maximum spacing of soffit framing members shall not exceed 24 inches (610 mm).

c. Wood structural panels shall be of an exterior exposure grade.

d. Wood structural panels shall be installed with strength axis perpendicular to supports with a minimum of two continuous spans.

e. Wood structural panels shall be attached to soffit framing members with specific gravity of at least 0.42. Framing members shall be minimum 2″ x 3″ nominal with the larger dimension in the cross section aligning with the length of fasteners to provide sufficient embedment depths.

f. Spacing at intermediate supports is permitted to be 12 inches on center.

1412.7 Aluminum fascia. Aluminum fascia shall comply with Section 1412.2 and shall be not less than 0.019 inches (0.48 mm) in thickness and installed in accordance with manufacturer's instructions. Aluminum fascia shall be attached to wood frame construction in accordance with Section 1412.7.1 or 1412.7.2.

1412.7.1 Fascia installation where the design wind pressure is 30 psf (1.44 kN/m²) or less. Where the design wind pressure is 30 pounds per square foot (1.44 kN/m²) or less, aluminum fascia shall be a attached with one finish nail ($1^1/_4$ inches × 0.057 inch × 0.177 inch head diameter) (32 mm × 1.4 mm × 4.5 mm) in the return leg spaced not greater than 24 inches (610 mm) on center, and the fascia shall be inserted under the drip edge with not less than 1 inch (25 mm) of fascia material covered by the drip edge. Where the fascia cannot be inserted under the drip edge, the top edge of the fascia shall be secured using one finish nail ($1^1/_4$ inches × 0.057 inch × 0.177 inch head diameter) (32 mm × 1.4 mm × 4.5 mm) located not more than 1 inch (25 mm) below the drip edge and spaced not greater than 24 inches (610 mm) on center.

1412.7.2 Fascia installation where the design wind pressure exceeds 30 psf (1.44 kN/m²). Where the design wind pressure is greater than 30 pounds per square foot (1.44 kN/m²), aluminum fascia shall be attached with one finish nail ($1^1/_4$ inches × 0.057 inch × 0.177 inch head diameter) (32 mm × 1.4 mm × 4.5 mm) in the return leg spaced a maximum of 16 inches (406 mm) on center and one finish nail located not greater than 1 inch (25 mm) below the drip edge spaced a maximum of 16 inches (406 mm) on center. As an alternative, the top edge of the fascia is permitted to be secured using utility trim installed beneath the drip edge with snap locks punched into the fascia spaced not greater than 6 inches (152 mm) on center.

SECTION 1413—[DSA-SS & DSA-SS/CC, OSHPD 1, 1R, 2, 4 & 5] ADDITIONAL REQUIREMENTS FOR ANCHORED AND ADHERED VENEER

1413.1 General. *In no case shall veneer be considered as part of the backing in computing strength or deflection, nor shall it be considered a part of the required thickness of the backing.*

Veneer shall be anchored in a manner which will not allow relative movement between the veneer and the wall.

Anchored or adhered veneer shall not be used on overhead horizontal surfaces.

1413.2 Adhered veneer. *Units of tile, masonry, stone or terra cotta which exceed $^5/_8$ inch (15.9 mm) in thickness shall be applied as for anchored veneer where used over exit ways or more than 20 feet (6.1 m) in height above adjacent ground elevation.*

1413.2.1 Bond strength and tests. *Irrespective of the mortar type, veneer type or design methodology used, adhered masonry veneer shall develop a bond shear strength to the backing of at least 50 psi (345 kPa) based on gross unit bonded area. The bond between adhered veneer units and backing shall be shear tested, in accordance with ASTM C1823, on a field-constructed mock-up using the specified unit, mortar and substrate.*

Not less than two shear tests shall be performed for the adhered veneer between the units and the supporting element. At least one shear test shall be performed at each building for each 5,000 square feet (465 m²) of wall area or fraction thereof.

1413.2.2 TMS 402, Section 13.3.2.2. *Replace TMS 402, Section 13.3.2.2 (c) with the following:*

(c) The weight of adhered masonry veneer units shall not exceed *15 psf (73 kg/m²).*

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CALIFORNIA BUILDING CODE – MATRIX ADOPTION TABLE
CHAPTER 15 – ROOF ASSEMBLIES AND ROOFTOP STRUCTURES

(Matrix Adoption Tables are nonregulatory, intended only as an aid to the code user.
See Chapter 1 for state agency authority and building applications.)

Adopting agency	BSC	BSC-CG	SFM	HCD			DSA			OSHPD							BSCC	DPH	AGR	DWR	CEC	CA	SL	SLC
				1	2	1/AC	AC	SS	SS/CC	1	1R	2	3	4	5	6								
Adopt entire chapter													**X**			**X**								
Adopt entire chapter as amended (amended sections listed below)	**X**			**X**	**X**			**X**	**X**	**X**	**X**	**X**		**X**	**X**									
Adopt only those sections that are listed below			**X**																					
Chapter / Section																								
1501			X																					
1502.1				X	X																			
1502.2				X	X																			
1503.3 – 1503.4			X																					
1505 – 1507			X																					
1507.3.10								X	X	X	X	X		X	X									
1507.7.8								X	X	X	X	X		X	X									
1509 – 1511			X																					
1511.9.6						X	X																	
1511.10 – 1511.10.1	X			X	X			X	X	X	X	X		X	X									
1512			X																					
1513								X	X	X	X	X		X	X									

The state agency does not adopt sections identified by the following symbol: †

The Office of the State Fire Marshal's adoption of this chapter or individual sections is applicable to structures regulated by other state agencies pursuant to Section 1.11.

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CHAPTER

15 ROOF ASSEMBLIES AND ROOFTOP STRUCTURES

User notes:

About this chapter: Chapter 15 provides minimum requirements for the design and construction of roof assemblies and rooftop structures. The criteria address the weather-protective barrier at the roof and, in most circumstances, a fire-resistant barrier. The chapter is largely prescriptive in nature and is based on decades of experience with various traditional materials, but it also recognizes newer products. Section 1511 addresses rooftop structures, which include penthouses, tanks, towers and spires. Rooftop penthouses larger than prescribed in this chapter must be treated as a story under Chapter 5.

ICC code development note: Code change proposals to sections preceded by the designation [BF] or [P] will be considered by one of the code development committees meeting during the 2024 (Group A) Code Development Cycle. All other code change proposals will be considered by a code development committee meeting during the 2025 (Group B) Code Development Cycle.

SECTION 1501—GENERAL

1501.1 Scope. The provisions of this chapter shall govern the design, materials, construction and quality of roof assemblies, and rooftop structures.

SECTION 1502—ROOF DRAINAGE

[P] 1502.1 General. Design and installation of roof drainage systems shall comply with this section, Section 1611 of this code and Chapter 11 of the *California Plumbing Code*.

[P] 1502.2 Secondary (emergency overflow) drains or scuppers. Where roof drains are required, secondary (emergency overflow) roof drains or scuppers shall be provided where the roof perimeter construction extends above the roof in such a manner that water will be entrapped if the primary drains allow buildup for any reason. The installation and sizing of secondary emergency overflow drains, leaders and conductors shall comply with Section 1611 of this code and Chapter 11 of the *California Plumbing Code*.

1502.3 Gutters. Gutters and leaders placed on the outside of buildings, other than Group R-3, private garages and buildings of Type V construction, shall be of noncombustible material or not less than Schedule 40 plastic pipe.

SECTION 1503—WEATHER PROTECTION

1503.1 General. Roof decks shall be covered with approved roof coverings secured to the building or structure in accordance with the provisions of this chapter. Roof coverings shall be designed in accordance with this code, and installed in accordance with this code and the manufacturer's approved instructions.

1503.2 Flashing. Flashing shall be installed in such a manner so as to prevent water from entering the wall and roof through joints in copings, through moisture-permeable materials and at intersections with parapet walls and other penetrations through the roof plane.

1503.2.1 Locations. Flashing shall be installed at wall and roof intersections, at gutters, wherever there is a change in roof slope or direction and around roof openings. Where flashing is of metal, the metal shall be corrosion resistant with a thickness of not less than 0.019 inch (0.483 mm) (No. 26 galvanized sheet).

1503.3 Parapet walls. Parapet walls shall be coped or covered in accordance with Sections 1503.3.1 and 1503.3.2. The top surface of the parapet wall shall provide positive drainage.

1503.3.1 Fire-resistance-rated parapet walls. Parapet walls required by Section 705.12 shall be coped or covered with weatherproof materials of a width not less than the thickness of the parapet wall such that the fire-resistance rating of the wall is not decreased.

1503.3.2 Other parapet walls. Parapet walls meeting one of the exceptions in Section 705.12 shall be coped or covered with weatherproof materials of a width not less than the thickness of the parapet wall.

1503.4 Attic and rafter ventilation. Intake and exhaust vents for ventilation of attic and enclosed rafter assemblies shall be provided in accordance with Section 1202.2 and the vent product manufacturer's installation instructions.

Exception: Unvented attic and unvented enclosed rafter assemblies in accordance with Section 1202.3.

1503.5 Crickets and saddles. A cricket or saddle shall be installed on the ridge side of any chimney or penetration greater than 30 inches (762 mm) wide as measured perpendicular to the slope. Cricket or saddle coverings shall be sheet metal or of the same material as the roof covering.

Exception: Unit skylights installed in accordance with Section 2405.5 and flashed in accordance with the manufacturer's instructions shall be permitted to be installed without a cricket or saddle.

SECTION 1504—PERFORMANCE REQUIREMENTS

1504.1 Wind resistance of roofs. Roof decks and roof coverings shall be designed in accordance with Section 1504.

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1504.2 Wind resistance of asphalt shingles. Asphalt shingles shall be tested in accordance with ASTM D7158. Asphalt shingles shall meet the classification requirements of Table 1504.2 for the appropriate maximum basic wind speed. Asphalt shingle packaging shall bear a label to indicate compliance with ASTM D7158 and the required classification in Table 1504.2.

Exception: Asphalt shingles not included in the scope of ASTM D7158 shall be tested and labeled in accordance with ASTM D3161. Asphalt shingle packaging shall bear a label to indicate compliance with ASTM D3161 and the required classification in Table 1504.2.

TABLE 1504.2—CLASSIFICATION OF STEEP SLOPE ROOF SHINGLES TESTED IN ACCORDANCE WITH ASTM D3161 OR D7158

MAXIMUM BASIC WIND SPEED, *V*, FROM FIGURES 1609.3(1)–(4) OR ASCE 7 (mph)	MAXIMUM ALLOWABLE STRESS DESIGN WIND SPEED, V_{asd}, FROM Table 1609.3.1 (mph)	ASTM D7158[a] CLASSIFICATION	ASTM D3161 or UL 7103 CLASSIFICATION
110	85	D, G or H	A, D or F
116	90	D, G or H	A, D or F
129	100	G or H	A, D or F
142	110	G or H	F
155	120	G or H	F
168	130	H	F
181	140	H	F
194	150	H	F

For SI: 1 foot = 304.8 mm, 1 mph = 0.447 m/s.

a. The standard calculations contained in ASTM D7158 assume Exposure Category B or C and building height of 60 feet or less. Additional calculations are required for conditions outside of these assumptions.

1504.3 Wind resistance of clay and concrete tile. Wind loads on clay and concrete tile roof coverings shall be in accordance with Section 1609.6.

1504.3.1 Testing. Testing of concrete and clay roof tiles shall be in accordance with Sections 1504.3.1.1, 1504.3.1.2 and 1504.3.1.3.

1504.3.1.1 Overturning resistance. Concrete and clay roof tiles shall be tested to determine their resistance to overturning due to wind in accordance with Chapter 15 and either SBCCI SSTD 11 or ASTM C1568.

1504.3.1.2 Wind tunnel testing. Where concrete and clay roof tiles do not satisfy the limitations in Chapter 16 for rigid tile, a wind tunnel test shall be used to determine the wind characteristics of the concrete or clay tile roof covering in accordance with Chapter 15 and either SBCCI SSTD 11 or ASTM C1569.

1504.3.1.3 Air permeability testing. The lift coefficient for concrete and clay tile shall be 0.2 or shall be determined in accordance with SBCCI SSTD 11 or ASTM C1570.

1504.4 Wind resistance of nonballasted roofs. Roof coverings installed on roofs in accordance with Section 1507 that are mechanically attached or adhered to the roof deck shall be designed to resist the design wind load pressures for components and cladding in accordance with Section 1609.6.2. The wind load on the roof covering shall be permitted to be determined using allowable stress design.

1504.4.1 Other roof systems. Built-up, modified bitumen, fully adhered or mechanically attached single-ply roof systems, metal panel roof systems applied to a solid or closely fitted deck and other types of membrane roof coverings shall be tested in accordance with FM 4474, UL 580 or UL 1897.

1504.4.2 Structural metal panel roof systems. Where the metal roof panel functions as the roof deck and roof covering and it provides both weather protection and support for loads, the structural metal panel roof system shall comply with this section. Structural standing-seam metal panel roof systems shall be tested in accordance with ASTM E1592 or FM 4474. Structural through-fastened metal panel roof systems shall be tested in accordance with ASTM E1592, FM 4474 or UL 580.

Exceptions:

1. Metal roofs constructed of cold-formed steel shall be permitted to be designed and tested in accordance with the applicable referenced structural design standard in Section 2204.1.
2. Metal roofs constructed of aluminum shall be permitted to be designed and tested in accordance with the applicable referenced structural design standard in Section 2002.1.

1504.4.3 Metal roof shingles. Metal roof shingles applied to a solid or closely fitted deck shall be tested in accordance with ASTM D3161, FM 4474, UL 580 or UL 1897. Metal roof shingles tested in accordance with ASTM D3161 shall meet the classification requirements of Table 1504.2 for the appropriate maximum basic wind speed and the metal shingle packaging shall bear a label to indicate compliance with ASTM D3161 and the required classification in Table 1504.2.

1504.4.4 Slate shingles. Slate shingles shall be tested in accordance with ASTM D3161. Slate packaging shall bear a label indicating compliance with ASTM D3161 and the required classification in Table 1504.2.

1504.5 Ballasted low-slope single-ply roof systems. Ballasted low-slope single-ply roof system coverings installed in accordance with Section 1507.12 shall be designed in accordance with ANSI/SPRI RP-4.

1504.6 Edge systems for low-slope roofs. Metal edge systems, except gutters and counterflashing, installed on built-up, modified bitumen and single-ply roof systems on a low-slope roof shall be designed and installed for wind loads in accordance with Chapter 16

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and tested for resistance in accordance with Test Methods RE-1, RE-2 and RE-3 of ANSI/SPRI ES-1, except basic wind speed, V, shall be determined from Figures 1609.3(1)through 1609.3(4), as applicable.

1504.6.1 Gutter securement for low-slope roofs. Gutters that are used to secure the perimeter edge of the roof membrane on low-slope built-up, modified bitumen, and single-ply roofs, shall be designed, constructed and installed to resist wind loads in accordance with Section 1609 and shall be tested in accordance with Test Methods G-1 and G-2 of SPRI GT-1.

1504.7 Impact resistance. Roof coverings installed on low-slope roofs in accordance with Section 1507 shall resist impact damage based on the results of tests conducted in accordance with ASTM D3746, ASTM D4272 or the "Resistance to Foot Traffic Test" in FM 4470.

1504.8 Wind resistance of aggregate-surfaced roofs. Parapets shall be provided for aggregate surfaced roofs and shall comply with Table 1504.8. Such parapets shall be provided on the perimeter of the roof at all exterior sides except where an adjacent wall extends above the roof to a height at least equivalent to that required for the parapet. For roofs with differing surface elevations due to slope or sections at different elevations, the minimum parapet height shall be determined based on each roof surface elevation, and at no point shall the parapet height be less than that required by Table 1504.8.

Exception: Ballasted single-ply roof coverings shall be designed and installed in accordance with Section 1504.5.

TABLE 1504.8—MINIMUM REQUIRED PARAPET HEIGHT (INCHES) FOR AGGREGATE SURFACED ROOFS[a, b, c, d, e]

AGGREGATE SIZE	MEAN ROOF HEIGHT (feet)	WIND EXPOSURE AND BASIC WIND SPEED, *V* (MPH)																	
		Exposure B									Exposure C[f]								
		≤ 95	100	105	110	115	120	130	140	150	≤ 95	100	105	110	115	120	130	140	150
ASTM D1863 (No. 7 or No. 67)	15	2	2	2	2	12	12	16	20	24	2	13	15	18	20	23	27	32	37
	20	2	2	2	2	12	14	18	22	26	12	15	17	19	22	24	29	34	39
	30	2	2	2	13	15	17	21	25	30	14	17	19	22	24	27	32	37	42
	50	12	12	14	16	18	21	25	30	35	17	19	22	25	28	30	36	41	47
	100	14	16	19	21	24	27	32	37	42	21	24	26	29	32	35	41	47	53
	150	17	19	22	25	27	30	36	41	46	23	26	29	32	35	38	44	50	56
ASTM D1863 (No. 6)	15	2	2	2	2	12	12	12	15	18	2	2	2	13	15	17	22	26	30
	20	2	2	2	2	12	12	13	17	21	2	2	12	15	17	19	23	28	32
	30	2	2	2	2	12	12	16	20	24	2	12	14	17	19	21	26	31	35
	50	12	12	12	12	14	16	20	24	28	12	15	17	19	22	24	29	34	39
	100	12	12	14	16	19	21	26	30	35	16	18	21	24	26	29	34	39	45
	150	12	14	17	19	22	24	29	34	39	18	21	23	26	29	32	37	43	48

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 mile per hour = 0.447 m/s.

a. Parapet height is measured vertically from the top surface of the coping down to the surface of the roof covering in the field of the roof adjacent to the parapet and outbound of any cant strip.

b. Interpolation shall be permitted for wind speed, mean roof height and parapet height. Extrapolation is not permitted.

c. Basic wind speed, *V*, and wind exposure shall be determined in accordance with Section 1609.

d. Where the minimum required parapet height is indicated to be 2 inches (51 mm), a gravel stop shall be permitted and shall extend not less than 2 inches (51 mm) from the roof surface and not less than the height of the aggregate.

e. The tabulated values apply only to conditions where the topographic factor (K_{zt}) determined in accordance with Chapter 26 of ASCE 7 is 1.0 or where K_{zt} is incorporated in the basic wind speed in Section 1609.

f. For Exposure D, add 8 inches (203 mm) to the parapet height required for Exposure C and the parapet height shall not be less than 12 inches (305 mm).

SECTION 1505—FIRE CLASSIFICATION

[BF] 1505.1 General. Fire classification of roof assemblies shall be in accordance with Section 1505. The minimum fire classification of roof assemblies installed on buildings shall comply with Table 1505.1 based on type of construction of the building. Class A, B and C roof assemblies and roof coverings required to be listed by this section shall be tested in accordance with ASTM E108 or UL 790. In addition, fire-retardant-treated woodroof coverings shall be tested in accordance with ASTM D2898; *fire-retardant-treated shingles and shakes shall comply with Section 1505.6.*

Exception: Skylights and sloped glazing that comply with Chapter 24 or Section 2610.

[BF] TABLE 1505.1—MINIMUM ROOF ASSEMBLY CLASSIFICATION FOR TYPES OF CONSTRUCTION[a, b]

IA	IB	IIA	IIB	IIIA	IIIB	IV	VA	VB
B	B	B	C[c]	B	C[c]	B	B	C[c]

For SI: 1 foot = 304.8 mm, 1 square foot = 0.0929 m^2.

a. Unless otherwise required in accordance with the *California Wildland-Urban Interface Code* or due to the location of the building within a fire district in accordance with Appendix D.

b. Nonclassified roof coverings shall be permitted on buildings of Group U occupancies, where there is a minimum fire-separation distance of 6 feet measured from the leading edge of the roof.

c. Buildings that are not more than two stories above grade plane and having not more than 6,000 square feet of projected roof area and where there is a minimum 10-foot fire-separation distance from the leading edge of the roof to a lot line on all sides of the building, except for street fronts or public ways, shall be permitted to have roofs of No. 1 cedar or redwood shakes and No. 1 shingles constructed in accordance with Section 1505.7.

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1505.1.1 Roofing requirements within Fire Hazard Severity Zones or in the Wildland-Urban Interface (WUI). *Roofing requirements for structures located within Fire Hazard Severity Zones or in the Wildland-Urban Interface (WUI) shall also comply with Chapter 5 of the California Wildland-Urban Interface Code.*

1505.1.2 Roof coverings within all other areas other than Fire Hazard Severity Zones or a Wildland-Urban Interface (WUI). *The entire roof covering of every existing structure where more than 50 percent of the total roof area is replaced within any one-year period, the entire roof covering of every new structure, and any roof covering applied in the alteration, repair or replacement of the roof of every existing structure, shall be a fire-retardant roof covering that is at least Class C fire classification.*

[BF] 1505.2 Class A roof assemblies. Class A roof assemblies are those that are effective against severe fire test exposure. Class A roof assemblies and roof coverings shall be listed and identified as Class A by an approved testing agency. Class A roof assemblies shall be permitted for use in buildings or structures of all types of construction.

Exceptions:

1. Class A roof assemblies include those with coverings of brick, masonry or an exposed concrete roof deck.
2. Class A roof assemblies also include ferrous or copper shingles or sheets, metal sheets and shingles, clay or concrete roof tile or slate installed on noncombustible decks or ferrous, copper or metal sheets installed without a roof deck on noncombustible framing.
3. Class A roof assemblies include minimum 16 ounce per square foot (0.0416 kg/m^2) copper sheets installed over combustible decks.
4. Class A roof assemblies include slate installed over ASTM D226, Type II or ASTM D4869, Type IV underlayment over combustible decks.

[BF] 1505.3 Class B roof assemblies. Class B roof assemblies are those that are effective against moderate fire-test exposure. Class B roof assemblies and roof coverings shall be listed and identified as Class B by an approved testing agency.

[BF] 1505.4 Class C roof assemblies. Class C roof assemblies are those that are effective against light fire-test exposure. Class C roof assemblies and roof coverings shall be listed and identified as Class C by an approved testing agency.

[BF] 1505.5 Nonclassified roofing. Nonclassified roofing is approved material that is not listed as a Class A, B or C roof covering *assembly or roof covering.*

[BF] 1505.6 Fire-retardant-treated wood shingles and shakes. Fire-retardant-treated wood shakes and shingles *are wood shakes and shingles complying with UBC Standard 15-3 or 15-4 which are impregnated by the full-cell vacuum-pressure process with fire-retardant chemicals, and which have been qualified by UBC Standard 15-2 or ASTM E108 or UL 790 for use on Class A, B or C roofs.*

Fire-retardant-treated wood shakes and shingles shall comply with ICC-ES EG107 and with the weathering requirements contained in Health and Safety Code Section 13132.7(j). Each bundle shall bear labels from an ICC accredited quality control agency identifying their roof-covering classification and indicating their compliance with ICC-ES EG107 and with the weathering requirements contained in Health and Safety Code Section 13132.7(j).

Health and Safety Code Section 13132.7(j). No wood roof covering materials shall be sold or applied in this state unless both of the following conditions are met:

(1) The materials have been approved and listed by the State Fire Marshal as complying with the requirements of this section.

(2) The materials have passed at least five years of the 10-year natural weathering test. The 10-year natural weathering test required by this subdivision shall be conducted in accordance with standard 15-2 of the 1994 edition of the Uniform Building Code at a testing facility recognized by the State Fire Marshal.

[BF] 1505.7 Special purpose roofs. Special purpose wood shingle or wood shake roofing shall conform to the grading and application requirements of Section 1507.8 or 1507.9. In addition, an underlayment of $^5/_8$-inch (15.9 mm) Type X water-resistant gypsum backing board or gypsum sheathing shall be placed under minimum nominal $^1/_2$-inch-thick (12.7 mm) wood structural panel solid sheathing or 1-inch (25 mm) nominal spaced sheathing.

[BF] 1505.8 Building-integrated photovoltaic (BIPV) systems. *BIPV products* installed as the roof covering shall be tested, listed and labeled for fire classification in accordance with Section 1505.1.

[BF] 1505.9 Rooftop mounted photovoltaic (PV) panel systems. Rooftop mounted photovoltaic (PV) panel systems shall be tested, listed and identified with a fire classification in accordance with UL 2703. Listed systems shall be installed in accordance with the manufacturer's installation instructions and their listing. The fire classification shall comply with Table 1505.1 based on the type of construction of the building.

[BF] 1505.10 Landscaped and vegetative roofs. Landscaped and vegetative roofs shall comply with Sections 1505.1 and 1507.15. Vegetative roofs shall be installed in accordance with ANSI/SPRI VF-1.

SECTION 1506—MATERIALS

1506.1 Scope. The requirements set forth in this section shall apply to the application of roof-covering materials specified herein. Roof coverings shall be applied in accordance with this chapter and the roof covering listing as required by Section 1505. Installation of roof coverings shall comply with the applicable provisions of Section 1507.

1506.2 Material specifications and physical characteristics. Roof-covering materials shall conform to the applicable standards listed in this chapter.

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1506.3 Product identification. Roof-covering materials shall be delivered in packages bearing the manufacturer's identifying marks and approved testing agency labels required in accordance with Section 1505. Bulk shipments of materials shall be accompanied with the same information issued in the form of a certificate or on a bill of lading by the manufacturer.

SECTION 1507—REQUIREMENTS FOR ROOF COVERINGS

1507.1 Scope. Roof coverings shall be applied in accordance with the applicable provisions of this section and the manufacturer's installation instructions.

1507.1.1 Underlayment. Underlayment in accordance with this section is required for asphalt shingles, clay and concrete tile, metal roof shingles, mineral-surfaced roll roofing, slate and slate-type shingles, wood shingles, wood shakes, metal roof panels and BIPV roof coverings. Such underlayment shall conform to the applicable standards listed in this chapter. Underlayment materials required to comply with ASTM D226, D1970, D2626, D4869, D6380 Class M, D6757 or D8257 shall bear a label indicating compliance with the standard designation and, if applicable, type classification indicated in Table 1507.1.1(1). Underlayment shall be fastened in accordance with Table 1507.1.1(2). Underlayment shall be attached in accordance with Table 1507.1.1(3).

Exception: Structural metal panels that do not require a substrate or underlayment.

TABLE 1507.1.1(1)—UNDERLAYMENT TYPES

ROOF COVERING	SECTION	MAXIMUM BASIC WIND SPEED, V < 130 MPH IN HURRICANE-PRONE REGIONS OR V < 140 MPH OUTSIDE HURRICANE-PRONE REGIONS	MAXIMUM BASIC WIND SPEED, $V \geq$ 130 MPH IN HURRICANE-PRONE REGIONS OR $V \geq$ 140 MPH OUTSIDE HURRICANE-PRONE REGIONS
Asphalt shingles	1507.2	ASTM D226 Type I or II ASTM D1970 ASTM D4869 Type I, II, III or IV ASTM D6757 ASTM D8257	ASTM D226 Type II ASTM D1970 ASTM D4869 Type III or IV ASTM D8257
Clay and concrete tiles	1507.3	ASTM D226 Type II ASTM D1970 ASTM D2626 ASTM D6380 Class M ASTM D8257	ASTM D226 Type II ASTM D1970 ASTM D8257
Metal roof panels applied to a solid or closely fitted deck	1507.4	ASTM D226 Type I or II ASTM D1970 ASTM D4869 Type I, II, III or IV ASTM D8257	ASTM D226 Type II ASTM D1970 ASTM D4869 Type III or IV ASTM D8257
Metal roof shingles	1507.5	ASTM D226 Type I or II ASTM D1970 ASTM D4869 Type I, II, III or IV ASTM D8257	ASTM D226 Type II ASTM D1970 ASTM D4869 Type III or IV ASTM D8257
Mineral-surfaced roll roofing	1507.6	ASTM D226 Type I or II ASTM D1970 ASTM D4869 Type I, II, III or IV ASTM D8257	ASTM D226 Type II ASTM D1970 ASTM D4869 Type III or IV ASTM D8257
Slate shingles	1507.7	ASTM D226 Type II ASTM D1970 ASTM D4869 Type III or IV ASTM D8257	ASTM D226 Type II ASTM D1970 ASTM D4869 Type III or IV ASTM D8257
Wood shingles	1507.8	ASTM D226 Type I or II ASTM D4869 Type I, II, III or IV	ASTM D226 Type II ASTM D4869 Type III or IV
Wood shakes applied to a solid sheathing roof deck	1507.9	ASTM D226 Type I or II ASTM D4869 Type I, II, III or IV	ASTM D226 Type II ASTM D4869 Type III or IV
BIPV roof coverings	1507.16	ASTM D226 Type I or II ASTM D1970 ASTM D4869 Type I, II, III or IV ASTM D6757 ASTM D8257	ASTM D226 Type II ASTM D1970 ASTM D4869 Type III or IV ASTM D8257

TABLE 1507.1.1(2)—UNDERLAYMENT APPLICATION

ROOF COVERING	SECTION	MAXIMUM BASIC WIND SPEED, V < 130 MPH IN HURRICANE-PRONE REGIONS OR V < 140 MPH OUTSIDE HURRICANE-PRONE REGIONS	MAXIMUM BASIC WIND SPEED, V ≥ 130 MPH IN HURRICANE-PRONE REGIONS OR V ≥ 140 MPH OUTSIDE HURRICANE-PRONE REGIONS
Asphalt shingles	1507.2	Underlayment shall be one of the following: 1. For roof slopes from 2 units vertical in 12 units horizontal (2:12) to 4 units vertical in 12 units horizontal (4:12), underlayment shall be two layers applied in the following manner: Apply a strip of underlayment that is half the width of a full sheet parallel to and starting at the eaves. Starting at the eaves, apply full-width sheets of underlayment, overlapping successive sheets half the width of a full sheet plus 2 inches. End laps shall be 4 inches and shall be offset by 6 feet. Distortions in the underlayment shall not interfere with the ability of the shingles to seal. 2. For roof slopes of 4 units vertical in 12 units horizontal (4:12) or greater, underlayment shall be one layer applied as follows: Underlayment shall be applied shingle fashion, parallel to and starting from the eaves and lapped 2 inches. Distortions in the underlayment shall not interfere with the ability of the shingles to seal. End laps shall be 4 inches and shall be offset by 6 feet. 3. A single layer of self-adhering polymer modified bitumen underlayment complying with ASTM D1970, installed in accordance with the underlayment and roof covering manufacturers' installation instructions for the deck material, roof ventilation configuration, and climate exposure of the roof covering.	Underlayment shall be one of the following: 1. Two layers of mechanically fastened underlayment applied in the following manner: Apply a strip of underlayment felt that is half the width of a full sheet parallel to and starting at the eaves, fastened sufficiently to hold in place. Starting at the eaves, apply full-width sheets of underlayment overlapping successive sheets half the width of a full sheet plus 2 inches. Distortions in the underlayment shall not interfere with the ability of the shingles to seal. End laps shall be 4 inches and shall be offset by 6 feet. 2. A strip not less than 4 inches in width of self-adhering polymer modified bitumen underlayment complying with ASTM D1970, installed in accordance with the manufacturer's installation instructions for the deck material, shall be applied over all joints in the roof decking. An approved underlayment complying with Table 1507.1.1(1) for the applicable roof covering and basic wind speed shall be applied over the entire roof over the 4-inch-wide membrane strips. Underlayment shall be applied in accordance with this table using the application requirements for where the maximum basic wind speed is less than 130 mph. 3. A single layer of self-adhering polymer modified bitumen underlayment complying with ASTM D1970, installed in accordance with the underlayment and roof covering manufacurers' installation instructions for the deck material, roof ventilation configuration and climate exposure of the roof covering.
Clay and concrete tile	1507.3	Underlayment shall be one of the following: 1. For roof slopes from $2^1/_2$ units vertical in 12 units horizontal ($2^1/_2$:12) to 4 units vertical in 12 units horizontal (4:12), underlayment shall be not fewer than two layers applied in the following manner: Apply a strip of underlayment that is half the width of a full sheet parallel to and starting at the eaves. Starting at the eaves, a full-width strip of underlayment felt shall be applied, overlapping successive sheets half the width of a full sheet plus 2 inches. End laps shall be 4 inches and shall be offset by 6 feet. 2. For roof slopes of 4 units vertical in 12 units horizontal (4:12) or greater, underlayment shall be one layer applied as follows: Underlayment shall be applied shingle fashion, parallel to and starting from the eaves and lapped 2 inches. End laps shall be 4 inches and shall be offset by 6 feet. 3. A single layer of self-adhering polymer modified bitumen underlayment complying with ASTM D1970, installed in accordance with the underlayment and roof covering manufacturers' installation instructions for the deck material, roof ventilation configuration, and climate exposure of the roof covering.	Underlayment shall be one of the following: 1. Two layers of mechanically fastened underlayment applied in the following manner: Apply a strip of underlayment that is half the width of a full sheet parallel to and starting at the eaves, fastened sufficiently to hold in place. Starting at the eaves, apply full-width sheets of underlayment, overlapping successive sheets half the width of a full sheet plus 2 inches. Distortions in the underlayment shall not interfere with the ability of the shingles to seal. End laps shall be 4 inches and shall be offset by 6 feet. 2. A strip not less than 4 inches in width of self-adhering polymer modified bitumen underlayment complying with ASTM D1970, installed in accordance with the manufacturer's installation instructions for the deck material, shall be applied over all joints in the roof decking. An approved underlayment complying with Table 1507.1.1(1) for the applicable roof covering and basic wind speed shall be applied over the entire roof over the 4-inch-wide membrane strips. Underlayment shall be applied in accordance with this table using the application requirements for where the maximum basic wind speed is less than 130 mph. 3. A single layer of self-adhering polymer modified bitumen underlayment complying with ASTM D1970, installed in accordance with the underlayment and roof covering manufacurers' installation instructions for the deck material, roof ventilation configuration, and climate exposure of the roof covering.

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TABLE 1507.1.1(2)—UNDERLAYMENT APPLICATION—continued

ROOF COVERING	SECTION	MAXIMUM BASIC WIND SPEED, V < 130 MPH IN HURRICANE-PRONE REGIONS OR V < 140 MPH OUTSIDE HURRICANE-PRONE REGIONS	MAXIMUM BASIC WIND SPEED, V ≥ 130 MPH IN HURRICANE-PRONE REGIONS OR V ≥ 140 MPH OUTSIDE HURRICANE-PRONE REGIONS
Metal roof panels	1507.4	Apply in accordance with the manufacturer's installation instructions	Underlayment shall be one of the following: 1. Two layers of mechanically fastened underlayment applied in the following manner: Apply a strip of underlayment that is half the width of a full sheet parallel to and starting at the eaves, fastened sufficiently to hold in place. Starting at the eaves, apply full-width sheets of underlayment, overlapping successful sheets half the width of a full sheet plus 2 inches. Distortions in the underlayment shall not interfere with the ability of the shingles to seal. End laps shall be 4 inches and shall be offset by 6 feet. 2. A strip not less than 4 inches in width of self-adhering polymer modified bitumen underlayment complying with ASTM D1970, installed in accordance with the manufacturer's installation instructions for the deck material, shall be applied over all joints in the roof decking. An approved underlayment complying with Table 1507.1.1(1) for the applicable roof covering and basic wind speed shall be applied over the entire roof over the 4-inch-wide membrane strips. Underlayment shall be applied in accordance with this table using the application requirements for where the maximum basic wind speed is less than 130 mph. 3. A single layer of self-adhering polymer modified bitumen underlayment complying with ASTM D1970, installed in accordance with the underlayment and roof covering manufacurers' installation instructions for the deck material, roof ventilation configuration, and climate exposure of the roof covering.
Metal roof shingles	1507.5		
Mineral-surfaced roll roofing	1507.6		
Slate shingles	1507.7		
Wood shingles	1507.8		
Wood shakes	1507.9		
BIPV roof coverings	1507.16	Underlayment shall be one of the following: 1. For roof slopes from 3 units vertical in 12 units horizontal (3:12) to 4 units vertical in 12 units horizontal (4:12), underlayment shall be two layers applied in the following manner: Apply a strip of underlayment that is half the width of a full sheet parallel to and starting at the eaves. Starting at the eaves, apply full-width sheets of underlayment, overlapping successive sheets half the width of a full sheet plus 2 inches. End laps shall be 4 inches and shall be offset by 6 feet. Distortions in the underlayment shall not interfere with the ability of the shingles to seal. 2. For roof slopes of 4 units vertical in 12 units horizontal (4:12) or greater, underlayment shall be one layer applied as follows: Underlayment shall be applied shingle fashion, parallel to and starting from the eaves and lapped 2 inches. Distortions in the underlayment shall not interfere with the ability of the shingles to seal. End laps shall be 4 inches and shall be offset by 6 feet. 3. A single layer of self-adhering polymer modified bitumen underlayment complying with ASTM D1970, installed in accordance with the underlayment and roof covering manufacturers' installation instructions for the deck material, roof ventilation configuration, and climate exposure of the roof covering.	Underlayment shall be one of the following: 1. Two layers of mechanically fastened underlayment applied in the following manner: Apply a strip of underlayment that is half the width of a full sheet parallel to and starting at the eaves, fastened sufficiently to hold in place. Starting at the eaves, apply full-width sheets of underlayment, overlapping successive sheets half the width of a full sheet plus 2 inches. Distortions in the underlayment shall not interfere with the ability of the shingles to seal. End laps shall be 4 inches and shall be offset by 6 feet. 2. A strip not less than 4 inches in width of self-adhering polymer modified bitumen underlayment complying with ASTM D1970, installed in accordance with the manufacturer's installation instructions for the deck material, shall be applied over all joints in the roof decking. An approved underlayment complying with Table 1507.1.1(1) for the applicable roof covering and basic wind speed shall be applied over the entire roof over the 4-inch-wide membrane strips. Underlayment shall be applied in accordance with this table using the application requirements for where the maximum basic wind speed is less than 130 mph. 3. A single layer of self-adhering polymer modified bitumen underlayment complying with ASTM D1970, installed in accordance with the underlayment and roof covering manufacturers' installation instructions for the deck material, roof ventilation configuration, and climate exposure of the roof covering.

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 mile per hour = 0.447 m/s.

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TABLE 1507.1.1(3)—UNDERLAYMENT FASTENING

ROOF COVERING	SECTION	MAXIMUM BASIC WIND SPEED, V < 130 MPH IN HURRICANE-PRONE REGIONS OR V < 140 MPH OUTSIDE HURRICANE-PRONE REGIONS	MAXIMUM BASIC WIND SPEED, $V \geq 130$ MPH IN HURRICANE-PRONE REGIONS OR $V \geq 140$ MPH OUTSIDE HURRICANE-PRONE REGIONS
Asphalt shingles	1507.2	Fastened sufficiently to hold in place	Mechanically fastened underlayment shall be fastened with corrosion-resistant fasteners in a grid pattern of not greater than 12 inches horizontally and vertically between side laps with a 6-inch spacing at side and end laps. Mechanically fastened underlayment shall be fastened using annular ring or deformed shank nails with 1-inch diameter metal or plastic caps. Metal caps shall have a thickness of not less than 32-gage (0.0134 inch) sheet metal. Power-driven metal caps shall have a minimum thickness of 0.010 inch. Minimum thickness of the outside edge of plastic caps shall be 0.035 inch. The cap nail shank shall be not less than 0.083 inch. The cap nail shank shall have a length sufficient to penetrate through the roof sheathing or not less than $^3/_4$ inch into the roof sheathing. Self-adhering polymer modified bitumen underlayment shall be installed in accordance with the underlayment and roof covering manufacturers' installation instructions for the deck material, roof ventilation configuration and climate exposure of the roof covering.
Clay and concrete tile	1507.3		
BIPV roof coverings	1507.16		
Metal roof panels	1507.4	Manufacturer's installation instructions	Mechanically fastened underlayment shall be fastened with corrosion-resistant fasteners in a grid pattern of not greater than 12 inches horizontally and vertically between side laps with a 6-inch spacing at side and end laps. Mechanically fastened underlayment shall be fastened using annular ring or deformed shank nails with 1-inch diameter metal or plastic caps. Metal caps shall have a thickness of not less than 32-gage sheet metal. Power-driven metal caps shall have a minimum thickness of 0.010 inch. Minimum thickness of the outside edge of plastic caps shall be 0.035 inch. The cap nail shank shall be not less than 0.083 inch. The cap nail shank shall have a length sufficient to penetrate through the roof sheathing or not less than $^3/_4$ inch into the roof sheathing. Self-adhering polymer modified bitumen underlayment shall be installed in accordance with the underlayment and roof covering manufacturers' installation instructions for the deck material, roof ventilation configuration and climate exposure of the roof covering.
Metal roof shingles	1507.5		
Mineral-surfaced roll roofing	1507.6		
Slate shingles	1507.7		
Wood shingles	1507.8		
Wood shakes	1507.9		

For SI: 1 inch = 25.4 mm, 1 mile per hour = 0.447 m/s.

1507.1.2 Ice barriers. In areas where there has been a history of ice forming along the eaves causing a backup of water, an ice barrier shall be installed for asphalt shingles, metal roof shingles, mineral-surfaced roll roofing, slate and slate-type shingles, wood shingles, and wood shakes. The ice barrier shall consist of not less than two layers of underlayment cemented together, or a self-adhering polymer modified bitumen sheet shall be used in place of normal underlayment and extend from the lowest edges of all roof surfaces to a point not less than 24 inches (610 mm) inside the exterior wall line of the building.

Exception: Detached accessory structures that do not contain conditioned floor area.

1507.2 Asphalt shingles. The installation of asphalt shingles shall comply with the provisions of this section.

1507.2.1 Deck requirements. Asphalt shingles shall be fastened to solidly sheathed decks.

1507.2.2 Slope. Asphalt shingles shall only be used on roof slopes of 2 units vertical in 12 units horizontal (17-percent slope) or greater. For roof slopes from 2 units vertical in 12 units horizontal (17-percent slope) up to 4 units vertical in 12 units horizontal (33-percent slope), double underlayment application is required in accordance with Section 1507.1.1.

1507.2.3 Underlayment. Underlayment shall comply with Section 1507.1.1.

1507.2.4 Asphalt shingles. Asphalt shingles shall comply with ASTM D3462.

1507.2.5 Fasteners. Fasteners for asphalt shingles shall be galvanized, stainless steel, aluminum or copper roofing nails, minimum 12-gage [0.105 inch (2.67 mm)] shank with a minimum $^3/_8$-inch-diameter (9.5 mm) head, of a length to penetrate through the roofing materials and not less than $^3/_4$ inch (19.1 mm) into the roof sheathing. Where the roof sheathing is less than $^3/_4$ inch (19.1 mm) thick, the nails shall penetrate through the sheathing. Fasteners shall comply with ASTM F1667.

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1507.2.6 Attachment. Asphalt shingles shall have the minimum number of fasteners required by the manufacturer, but not less than four fasteners per strip shingle or two fasteners per individual shingle. Where the roof slope exceeds 21 units vertical in 12 units horizontal (21:12), shingles shall be installed as required by the manufacturer.

1507.2.7 Ice barrier. Where required, ice barriers shall comply with Section 1507.1.2.

1507.2.8 Flashings. Flashing for asphalt shingles shall comply with this section. Flashing shall be applied in accordance with this section and the asphalt shingle manufacturer's instructions.

1507.2.8.1 Base and cap flashing. Base and cap flashing shall be installed in accordance with the manufacturer's instructions. Base flashing shall be of either corrosion-resistant metal of minimum nominal 0.019-inch (0.483 mm) thickness or mineral-surfaced roll roofing weighing not less than 77 pounds per 100 square feet (3.76 kg/m^2). Cap flashing shall be corrosion-resistant metal of minimum nominal 0.019-inch (0.483 mm) thickness.

1507.2.8.2 Valleys. Valley linings shall be installed in accordance with the manufacturer's instructions before applying shingles. Valley linings of the following types shall be permitted:

1. For open valleys (valley lining exposed) lined with metal, the valley lining shall be not less than 24 inches (610 mm) wide and of any of the corrosion-resistant metals in Table 1507.2.8.2.
2. For open valleys, valley lining of two plies of mineral-surfaced roll roofing complying with ASTM D3909 or ASTM D6380 shall be permitted. The bottom layer shall be 18 inches (457 mm) and the top layer not less than 36 inches (914 mm) wide.
3. For closed valleys (valleys covered with shingles), valley lining of one ply of smooth roll roofing complying with ASTM D6380 and not less than 36 inches (914 mm) wide or types as described in Item 1 or 2 above shall be permitted. Self-adhering polymer modified bitumen underlayment bearing a label indicating compliance with ASTM D1970 and not less than 36 inches (914 mm) wide shall be permitted in lieu of the lining material.

TABLE 1507.2.8.2—VALLEY LINING MATERIAL

MATERIAL	MINIMUM THICKNESS	GAGE	WEIGHT
Aluminum	0.024 in.	—	—
Cold-rolled copper	0.0216 in.	—	ASTM B370, 16 oz. per square ft.
Copper	—	—	16 oz.
Galvanized steel	0.0179 in.	26 (zinc-coated G90)	—
High-yield copper	0.0162 in.	—	ASTM B370, 12 oz. per square ft.
Lead	—	—	2.5 pounds
Lead-coated copper	0.0216 in.	—	ASTM B101, 16 oz. per square ft.
Lead-coated high-yield copper	0.0162 in.	—	ASTM B101, 12 oz. per square ft.
Painted terne	—	—	20 pounds
Stainless steel	—	28	—
Zinc alloy	0.027 in.	—	—

For SI: 1 inch = 25.4 mm, 1 pound = 0.454 kg, 1 ounce = 28.35 g, 1 square foot = 0.0929 m^2.

1507.2.8.3 Drip edge. A drip edge shall be provided at eaves and rake edges of shingle roofs. Adjacent segments of the drip edge shall be lapped not less than 2 inches (51 mm). The vertical leg of drip edges shall be not less than $1^1/_2$ inches (38 mm) in width and shall extend not less than $^1/_4$ inch (6.4 mm) below sheathing. The drip edge shall extend back on the roof not less than 2 inches (51 mm). Underlayment shall be installed over drip edges along eaves. Drip edges shall be installed over underlayment along rake edges. Drip edges shall be mechanically fastened at intervals not greater than 12 inches (305 mm) on center.

1507.3 Clay and concrete tile. The installation of clay and concrete tile shall comply with the provisions of this section.

1507.3.1 Deck requirements. Concrete and clay tile shall be installed only over solid sheathing.

Exception: Spaced lumber sheathing shall be permitted in Seismic Design Categories A, B and C.

1507.3.2 Deck slope. Clay and concrete roof tile shall be installed on roof slopes of $2^1/_2$ units vertical in 12 units horizontal (21-percent slope) or greater. For roof slopes from $2^1/_2$ units vertical in 12 units horizontal (21-percent slope) to 4 units vertical in 12 units horizontal (33-percent slope), double underlayment application is required in accordance with Section 1507.1.1.

1507.3.3 Underlayment. Unless otherwise noted, required underlayment shall conform to: ASTM D226, Type II; ASTM D2626 or ASTM D6380, Class M mineral-surfaced roll roofing.

1507.3.4 Clay tile. Clay roof tile shall comply with ASTM C1167.

1507.3.5 Concrete tile. Concrete roof tile shall comply with ASTM C1492.

1507.3.6 Fasteners. Tile fasteners shall be corrosion resistant and not less than 11-gage, [0.120 inch (3 mm)], $^5/_{16}$-inch (8.0 mm) head, and of sufficient length to penetrate the deck not less than $^3/_4$ inch (19.1 mm) or through the thickness of the deck, which-

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ever is less. Attaching wire for clay or concrete tile shall not be smaller than 0.083 inch (2.1 mm). Perimeter fastening areas include three tile courses but not less than 36 inches (914 mm) from either side of hips or ridges and edges of eaves and gable rakes.

1507.3.7 Attachment. Clay and concrete roof tiles shall be fastened in accordance with Table 1507.3.7.

TABLE 1507.3.7—CLAY AND CONCRETE TILE ATTACHMENT[a, b, c]

GENERAL—CLAY OR CONCRETE ROOF TILE

Maximum Allowable Stress Design Wind Speed, V_{asd}[f] (mph)	Mean roof height (feet)	Roof slope < 3:12	Roof slope 3:12 and over
85	0-60	One fastener per tile. Flat tile without vertical laps, two fasteners per tile.	Two fasteners per tile. Only one fastener on slopes of 7:12 and less for tiles with installed weight exceeding 7.5 lbs./sq. ft. having a width not more than 16 inches.
100	0-40		
100	> 40-60	The head of all tiles shall be nailed. The nose of all eave tiles shall be fastened with approved clips. Rake tiles shall be nailed with two nails. The nose of all ridge, hip and rake tiles shall be set in a bead of roofer's mastic.	
110	0-60	The fastening system shall resist the wind forces in Section 1609.6.3.1.	
120	0-60	The fastening system shall resist the wind forces in Section 1609.6.3.1.	
130	0-60	The fastening system shall resist the wind forces in Section 1609.6.3.1.	
All	> 60	The fastening system shall resist the wind forces in Section 1609.6.3.1.	

INTERLOCKING CLAY OR CONCRETE ROOF TILE WITH PROJECTING ANCHOR LUGS[d, e]
(Installations on spaced/solid sheathing with battens or spaced sheathing)

Maximum Allowable Stress Design Wind Speed, V_{asd}[f] (mph)	Mean roof height (feet)	Roof slope < 5:12	Roof slope 5:12 < 12:12	Roof slope 12:12 and over
85	0-60	Fasteners are not required. Tiles with installed weight less than 9 lbs./sq. ft. require not fewer than one fastener per tile.	One fastener per tile every other row. Perimeter tiles require one fastener. Tiles with installed weight less than 9 lbs./sq. ft. require not fewer than one fastener per tile.	One fastener required for every tile. Tiles with installed weight less than 9 lbs./sq. ft. require not fewer than one fastener per tile.
100	0-40			
100	> 40-60	The head of all tiles shall be nailed. The nose of all eave tiles shall be fastened with approved clips. Rake5 tiles shall be nailed with two nails. The nose of all ridge, hip and rake tiles shall be set in a bead of roofer's mastic.		
110	0-60	The fastening system shall resist the wind forces in Section 1609.6.3.1.		
120	0-60	The fastening system shall resist the wind forces in Section 1609.6.3.1.		
130	0-60	The fastening system shall resist the wind forces in Section 1609.6.3.1.		
All	> 60	The fastening system shall resist the wind forces in Section 1609.6.3.1.		

INTERLOCKING CLAY OR CONCRETE ROOF TILE WITH PROJECTING ANCHOR LUGS
(Installations on solid sheathing without battens)

Maximum Allowable Stress Wind Speed, V_{asd}[f] (mph)	Mean roof height (feet)	All roof slopes
85	0-60	One fastener per tile.
100	0-40	One fastener per tile.
100	> 40-60	The head of all tiles shall be nailed. The nose of all eave tiles shall be fastened with approved clips. Rake tiles shall be nailed with two nails. The nose of all ridge, hip and rake tiles shall be set in a bead of roofer's mastic.
110	0-60	The fastening system shall resist the wind forces in Section 1609.6.3.1.
120	0-60	The fastening system shall resist the wind forces in Section 1609.6.3.1.
130	0-60	The fastening system shall resist the wind forces in Section 1609.6.3.1.
All	> 60	The fastening system shall resist the wind forces in Section 1609.6.3.1.

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 mile per hour = 0.447 m/s, 1 pound per square foot = 4.882 kg/m^2.

a. Minimum fastener size. Corrosion-resistant nails not less than No. 11 gage with $^5/_{16}$-inch head. Fasteners shall be long enough to penetrate into the sheathing $^3/_4$ inch or through the thickness of the sheathing, whichever is less. Attaching wire for clay and concrete tile shall not be smaller than 0.083 inch.

b. Snow areas. Not fewer than two fasteners per tile are required or battens and one fastener.

c. Roof slopes greater than 24:12. The nose of all tiles shall be securely fastened.

d. Horizontal battens. Battens shall be not less than 1 inch by 2 inches nominal. Provisions shall be made for drainage by a riser of not less than $^1/_8$ inch at each nail or by 4-foot-long battens with not less than a $^1/_2$-inch separation between battens. Horizontal battens are required for slopes over 7:12.

e. Perimeter fastening areas include three tile courses but not less than 36 inches from either side of hips or ridges and edges of eaves and *gable* rakes.

f. V_{asd} shall be determined in accordance with Section 1609.3.1.

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1507.3.8 Application. Tile shall be applied according to the manufacturer's installation instructions, based on the following:

1. Climatic conditions.
2. Roof slope.
3. Underlayment system.
4. Type of tile being installed.

1507.3.9 Flashing. At the juncture of the roof vertical surfaces, flashing and counterflashing shall be provided in accordance with the manufacturer's installation instructions, and where of metal, shall be not less than 0.019-inch (0.48 mm) (No. 26 galvanized sheet gage) corrosion-resistant metal. The valley flashing shall extend not less than 11 inches (279 mm) from the centerline each way and have a splash diverter rib not less than 1 inch (25 mm) high at the flow line formed as part of the flashing. Sections of flashing shall have an end lap of not less than 4 inches (102 mm). For roof slopes of three units vertical in 12 units horizontal (25-percent slope) and over, the valley flashing shall have a 36-inch-wide (914 mm) underlayment of either one layer of Type I underlayment running the full length of the valley, or a self-adhering polymer-modified bitumen sheet bearing a label indicating compliance with ASTM D1970, in addition to other required underlayment. In areas where the average daily temperature in January is 25°F (-4°C) or less or where there is a possibility of ice forming along the eaves causing a backup of water, the metal valley flashing underlayment shall be solid cemented to the roofing underlayment for slopes under seven units vertical in 12 units horizontal (58-percent slope) or self-adhering polymer-modified bitumen sheet shall be installed.

1507.3.10 Additional requirements. [DSA-SS & DSA-SS/CC, OSHPD 1, 1R, 2, 4 & 5] *In addition to the requirements of 1507.3.6 and 1507.3.7, the installation of clay and concrete tile roof coverings shall comply with seismic anchorage provisions of Section 1513.*

1507.4 Metal roof panels. The installation of metal roof panels shall comply with the provisions of this section.

1507.4.1 Deck requirements. Metal roof panel roof coverings shall be applied to a solid or closely fitted deck, except where the roof covering is specifically designed to be applied to spaced supports.

1507.4.2 Deck slope. Minimum slopes for metal roof panels shall comply with the following:

1. The minimum slope for lapped, nonsoldered seam metal roof panels without applied lap sealant shall be three units vertical in 12 units horizontal (25-percent slope).
2. The minimum slope for lapped, nonsoldered seam metal roof panels with applied lap sealant shall be one-half unit vertical in 12 units horizontal (4-percent slope). Lap sealants shall be applied in accordance with the approved manufacturer's installation instructions.
3. The minimum slope for standing-seam metal roof panel systems shall be one-quarter unit vertical in 12 units horizontal (2-percent slope).

1507.4.3 Material standards. Metal-sheet roof covering systems that incorporate supporting structural members shall be designed in accordance with Chapter 22. Metal-sheet roof coverings shall comply with Table 1507.4.3.

TABLE 1507.4.3—METAL ROOF COVERINGS

ROOF COVERING TYPE	STANDARD APPLICATION RATE/THICKNESS
5% aluminum alloy-coated steel	ASTM A875, GF60
Aluminum	ASTM B209, 0.024 inch minimum thickness for roll-formed panels and 0.019 inch minimum thickness for press-formed shingles.
Aluminum-coated steel	ASTM A463, T2 65
55% aluminum-zinc alloy coated steel	ASTM A792 AZ 50
Cold-rolled copper	ASTM B370 minimum 16 oz./sq. ft. and 12 oz./sq. ft. high yield copper for metal-sheet roof covering systems: 12 oz./sq. ft. for preformed metal shingle systems.
Copper	16 oz./sq. ft. for metal-sheet roof-covering systems; 12 oz./sq. ft. for preformed metal shingle systems.
Galvanized steel	ASTM A653 G-90 zinc-coated.[a]
Hard lead	2 lbs./sq. ft.
Lead-coated copper	ASTM B101
Prepainted steel	ASTM A755
Soft lead	3 lbs./sq. ft.
Stainless steel	ASTM A240, 300 Series Alloys
Steel	ASTM A924
Terne and terne-coated stainless	Terne coating of 40 lbs. per double base box, field painted where applicable in accordance with manufacturer's installation instructions.
Zinc	0.027 inch minimum thickness; 99.995% electrolytic high-grade zinc with alloy additives of copper (0.08% - 0.20%), titanium (0.07% - 0.12%) and aluminum (0.015%).

For SI: 1 ounce per square foot = 0.305 kg/m^2, 1 pound per square foot = 4.882 kg/m^2, 1 inch = 25.4 mm, 1 pound = 0.454 kg.
a. For Group U buildings, the minimum coating thickness for ASTM A653 galvanized steel roofing shall be G60.

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1507.4.4 Attachment. Metal roof panels shall be secured to the supports in accordance with the approved manufacturer's fasteners. In the absence of manufacturer recommendations, the following fasteners shall be used:

1. Galvanized fasteners shall be used for steel roofs.
2. Copper, brass, bronze, copper alloy or 300 series stainless-steel fasteners shall be used for copper roofs.
3. Stainless-steel fasteners are acceptable for all types of metal roofs.
4. Aluminum fasteners are acceptable for aluminum roofs attached to aluminum supports.

1507.4.5 Underlayment and high wind. Underlayment shall comply with Section 1507.1.1.

1507.5 Metal roof shingles. The installation of metal roof shingles shall comply with the provisions of this section.

1507.5.1 Deck requirements. Metal roof shingles shall be applied to a solid or closely fitted deck, except where the roof covering is specifically designed to be applied to spaced sheathing.

1507.5.2 Deck slope. Metal roof shingles shall not be installed on roof slopes below 3 units vertical in 12 units horizontal (25-percent slope).

1507.5.3 Underlayment. Underlayment shall comply with Section 1507.1.1.

1507.5.4 Ice barrier. Where required, ice barriers shall comply with Section 1507.1.2.

1507.5.5 Material standards. Metal roof shingle roof coverings shall comply with Table 1507.4.3.

1507.5.6 Attachment. Metal roof shingles shall be secured to the roof in accordance with the approved manufacturer's installation instructions.

1507.5.7 Flashing. Roof valley flashing shall be of corrosion-resistant metal of the same material as the roof covering or shall comply with the standards in Table 1507.4.3. The valley flashing shall extend not less than 8 inches (203 mm) from the centerline each way and shall have a splash diverter rib not less than $^{3}/_{4}$ inch (19.1 mm) high at the flow line formed as part of the flashing. Sections of flashing shall have an end lap of not less than 4 inches (102 mm). In areas where the average daily temperature in January is 25°F (-4°C) or less or where there is a possibility of ice forming along the eaves causing a backup of water, the metal valley flashing shall have a 36-inch-wide (914 mm) underlayment directly under it consisting of either one layer of underlayment running the full length of the valley or a self-adhering polymer-modified bitumen sheet bearing a label indicating compliance with ASTM D1970, in addition to underlayment required for metal roof shingles. The metal valley flashing underlayment shall be solidly cemented to the roofing underlayment for roof slopes under seven units vertical in 12 units horizontal (58-percent slope) or self-adhering polymer-modified bitumen sheet shall be installed.

1507.6 Mineral-surfaced roll roofing. The installation of mineral-surfaced roll roofing shall comply with this section.

1507.6.1 Deck requirements. Mineral-surfaced roll roofing shall be fastened to solidly sheathed roofs.

1507.6.2 Deck slope. Mineral-surfaced roll roofing shall not be applied on roof slopes below 1 unit vertical in 12 units horizontal (8-percent slope).

1507.6.3 Underlayment. Underlayment shall comply with Section 1507.1.1.

1507.6.4 Ice barrier. Where required, ice barriers shall comply with Section 1507.1.2.

1507.6.5 Material standards. Mineral-surfaced roll roofing shall conform to ASTM D3909 or ASTM D6380.

1507.7 Slate shingles. The installation of slate shingles shall comply with the provisions of this section.

1507.7.1 Deck requirements. Slate shingles shall be fastened to solidly sheathed roofs.

1507.7.2 Deck slope. Slate shingles shall only be used on slopes of 4 units vertical in 12 units horizontal (4:12) or greater.

1507.7.3 Underlayment. Underlayment shall comply with Section 1507.1.1.

1507.7.4 Ice barrier. Where required, ice barriers shall comply with Section 1507.1.2.

1507.7.5 Material standards. Slate shingles shall comply with ASTM C406.

1507.7.6 Application. Minimum headlap for slate shingles shall be in accordance with Table 1507.7.6. Slate shingles shall be secured to the roof with two fasteners per slate.

TABLE 1507.7.6—SLATE SHINGLE HEADLAP

SLOPE	HEADLAP (inches)
4:12 < slope < 8:12	4
8:12 < slope < 20:12	3
slope ≥ 20:12	2

For SI: 1 inch = 25.4 mm.

1507.7.7 Flashing. Flashing and counterflashing shall be made with sheet metal. Valley flashing shall be not less than 15 inches (381 mm) wide. Valley and flashing metal shall be a minimum uncoated thickness of 0.0179-inch (0.455 mm) zinc-coated G90. Chimneys, stucco or brick walls shall have not fewer than two plies of felt for a cap flashing consisting of a 4-inch-wide (102 mm)

strip of felt set in plastic cement and extending 1 inch (25 mm) above the first felt and a top coating of plastic cement. The felt shall extend over the base flashing 2 inches (51 mm).

1507.7.8 Additional requirements. [DSA-SS & DSA-SS/CC, OSHPD 1, 1R, 2, 4 & 5] *In addition to the requirements of Section 1507.7.5, the installation of slate shingle roof coverings shall comply with the requirements of Sections 1507.3.6 and 1507.3.7, and the seismic anchorage provisions of Section 1513.*

1507.8 Wood shingles. The installation of wood shingles shall comply with the provisions of this section and Table 1507.8.

TABLE 1507.8—WOOD SHINGLE AND SHAKE INSTALLATION

ROOF ITEM	WOOD SHINGLES	WOOD SHAKES
1. Roof slope	Wood shingles shall be installed on slopes of not less than 3 units vertical in 12 units horizontal (3:12).	Wood shakes shall be installed on slopes of not less than 4 units vertical in 12 units horizontal (4:12).
2. Deck requirement		
Temperate climate	Shingles shall be applied to roofs with solid or spaced sheathing. Where spaced sheathing is used, sheathing boards shall be not less than 1″ × 4″ nominal dimensions and shall be spaced on centers equal to the weather exposure to coincide with the placement of fasteners.	Shakes shall be applied to roofs with solid or spaced sheathing. Where spaced sheathing is used, sheathing boards shall be not less than 1″ × 4″ nominal dimensions and shall be spaced on centers equal to the weather exposure to coincide with the placement of fasteners. Where 1″ × 4″ spaced sheathing is installed at 10 inches, boards must be installed between the sheathing boards.
In areas where the average daily temperature in January is 25°F or less or where there is a possibility of ice forming along the eaves causing a backup of water.	Solid sheathing is required.	Solid sheathing is required.
3. Interlayment	No requirements.	Interlayment shall comply with ASTM D226, Type 1.
4. Underlayment		
Temperate climate	Underlayment shall comply with Section 1507.1.1.	Underlayment shall comply with Section 1507.1.1.
5. Application		
Attachment	Fasteners for wood shingles shall be hot-dipped galvanized or Type 304 (Type 316 for coastal areas) stainless steel with a minimum penetration of 0.75 inch into the sheathing. For sheathing less than 0.5 inch thick, the fasteners shall extend through the sheathing.	Fasteners for wood shakes shall be hot-dipped galvanized or Type 304 (Type 316 for coastal areas) with a minimum penetration of 0.75 inch into the sheathing. For sheathing less than 0.5 inch thick, the fasteners shall extend through the sheathing.
No. of fasteners	Two per shingle.	Two per shake.
Exposure	Weather exposures shall not exceed those set forth in Table 1507.8.7.	Weather exposures shall not exceed those set forth in Table 1507.9.8.
Method	Shingles shall be laid with a side lap of not less than 1.5 inches between joints in courses, and no two joints in any three adjacent courses shall be in direct alignment. Spacing between shingles shall be 0.25 to 0.375 inch.	Shakes shall be laid with a side lap of not less than 1.5 inches between joints in adjacent courses. Spacing between shakes shall not be less than 0.375 inch or more than 0.625 inch for shakes and taper sawn shakes of naturally durable wood and shall be 0.25 to 0.375 inch for preservative-treated taper sawn shakes.
Flashing	In accordance with Section 1507.8.8.	In accordance with Section 1507.9.9.

For SI: 1 inch = 25.4 mm, °C = [(°F) - 32]/1.8.

1507.8.1 Deck requirements. Wood shingles shall be installed on solid or spaced sheathing. Where spaced sheathing is used, sheathing boards shall be not less than 1-inch by 4-inch (25 mm by 102 mm) nominal dimensions and shall be spaced on centers equal to the weather exposure to coincide with the placement of fasteners. Where 1-inch × 4-inch (25 mm × 102 mm) spaced sheathing is installed at 10 inches (254 mm) on center or greater, additional 1-inch × 4-inch (25 mm × 102 mm) boards shall be installed between the sheathing boards. When wood shingles are installed over spaced sheathing and the underside of the shingles are exposed to the attic space, the attic shall be ventilated in accordance with Section 1202.2. The shingles shall not be backed with materials that will occupy the required air gap space and prevent the free movement of air on the interior side of the spaced sheathing.

1507.8.1.1 Solid sheathing required. Solid sheathing is required in areas where the average daily temperature in January is 25°F (-4°C) or less or where there is a possibility of ice forming along the eaves causing a backup of water.

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1507.8.2 Deck slope. Wood shingles shall be installed on slopes of not less than 3 units vertical in 12 units horizontal (25-percent slope).

1507.8.3 Underlayment. Underlayment shall comply with Section 1507.1.1.

1507.8.4 Ice barrier. Where required, ice barriers shall comply with Section 1507.1.2.

1507.8.5 Material standards. Wood shingles shall be of naturally durable wood and comply with the requirements of Table 1507.8.5.

TABLE 1507.8.5—WOOD SHINGLE MATERIAL REQUIREMENTS

MATERIAL	APPLICABLE MINIMUM GRADES	GRADING RULES
Wood shingles of naturally durable wood	1, 2 or 3	CSSB

CSSB = Cedar Shake and Shingle Bureau

1507.8.6 Attachment. Fasteners for wood shingles shall be corrosion resistant with a minimum penetration of $^3/_4$ inch (19.1 mm) into the sheathing. For sheathing less than $^1/_2$ inch (12.7 mm) in thickness, the fasteners shall extend through the sheathing. Each shingle shall be attached with not fewer than two fasteners.

1507.8.7 Application. Wood shingles shall be laid with a side lap not less than $1^1/_2$ inches (38 mm) between joints in adjacent courses, and not be in direct alignment in alternate courses. Spacing between shingles shall be $^1/_4$ to $^3/_8$ inch (6.4 to 9.5 mm). Weather exposure for wood shingles shall not exceed that set in Table 1507.8.7.

TABLE 1507.8.7—WOOD SHINGLE WEATHER EXPOSURE AND ROOF SLOPE

ROOFING MATERIAL	LENGTH (inches)	GRADE	EXPOSURE (inches)	
			3:12 pitch to < 4:12	4:12 pitch or steeper
Shingles of naturally durable wood	16	No. 1	3.75	5
		No. 2	3.5	4
		No. 3	3	3.5
	18	No. 1	4.25	5.5
		No. 2	4	4.5
		No. 3	3.5	4
	24	No. 1	5.75	7.5
		No. 2	5.5	6.5
		No. 3	5	5.5

For SI: 1 inch = 25.4 mm.

1507.8.8 Flashing. At the juncture of the roof and vertical surfaces, flashing and counterflashing shall be provided in accordance with the manufacturer's installation instructions, and where of metal, shall be not less than 0.019-inch (0.48 mm) (No. 26 galvanized sheet gage) corrosion-resistant metal. The valley flashing shall extend not less than 11 inches (279 mm) from the centerline each way and have a splash diverter rib not less than 1 inch (25 mm) high at the flow line formed as part of the flashing. Sections of flashing shall have an end lap of not less than 4 inches (102 mm). For roof slopes of three units vertical in 12 units horizontal (25-percent slope) and over, the valley flashing shall have a 36-inch-wide (914 mm) underlayment of either one layer of Type I underlayment running the full length of the valley or a self-adhering polymer-modified bitumen sheet bearing a label indicating compliance with ASTM D1970, in addition to other required underlayment. In areas where the average daily temperature in January is 25°F (-4°C) or less or where there is a possibility of ice forming along the eaves causing a backup of water, the metal valley flashing underlayment shall be solidly cemented to the roofing underlayment for slopes under seven units vertical in 12 units horizontal (58-percent slope) or self-adhering polymer-modified bitumen sheet shall be installed.

1507.8.9 Label required. Each bundle of shingles shall be identified by a label of an approved grading or inspection bureau or agency.

1507.9 Wood shakes. The installation of wood shakes shall comply with the provisions of this section and Table 1507.8.

1507.9.1 Deck requirements. Wood shakes shall only be used on solid or spaced sheathing. Where spaced sheathing is used, sheathing boards shall be not less than 1-inch by 4-inch (25 mm by 102 mm) nominal dimensions and shall be spaced on centers equal to the weather exposure to coincide with the placement of fasteners. Where 1-inch by 4-inch (25 mm by 102 mm) spaced sheathing is installed at 10 inches (254 mm) on center, additional 1-inch by 4-inch (25 mm by 102 mm) boards shall be installed between the sheathing boards. Where wood shakes are installed over spaced sheathing and the underside of the shakes are exposed to the attic space, the attic shall be ventilated in accordance with Section 1202.2. The shakes shall not be backed with materials that will occupy the required air gap space and prevent the free movement of air on the interior side of the spaced sheathing.

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1507.9.1.1 Solid sheathing required. Solid sheathing is required in areas where the average daily temperature in January is 25°F (-4°C) or less or where there is a possibility of ice forming along the eaves causing a backup of water.

1507.9.2 Deck slope. Wood shakes shall only be used on slopes of not less than 4 units vertical in 12 units horizontal (33-percent slope).

1507.9.3 Underlayment. Underlayment shall comply with Section 1507.1.1.

1507.9.4 Ice barrier. Where required, ice barriers shall comply with Section 1507.1.2.

1507.9.5 Interlayment. Interlayment shall comply with ASTM D226, Type I.

1507.9.6 Material standards. Wood shakes shall comply with the requirements of Table 1507.9.6.

TABLE 1507.9.6—WOOD SHAKE MATERIAL REQUIREMENTS

MATERIAL	MINIMUM GRADES	APPLICABLE GRADING RULES
Wood shakes of naturally durable wood	1	CSSB
Taper sawn shakes of naturally durable wood	1 or 2	CSSB
Preservative-treated shakes and shingles of naturally durable wood	1	CSSB
Fire-retardant-treated shakes and shingles of naturally durable wood	1	CSSB
Preservative-treated taper sawn shakes of Southern pine treated in accordance with AWPA U1 (Commodity Specification A, Special Requirement 4.6)	1 or 2	TFS

CSSB = Cedar Shake and Shingle Bureau.
TFS = Forest Products Laboratory of the Texas Forest Services.

1507.9.7 Attachment. Fasteners for wood shakes shall be corrosion resistant with a minimum penetration of $^3/_4$ inch (19.1 mm) into the sheathing. For sheathing less than $^1/_2$ inch (12.7 mm) in thickness, the fasteners shall extend through the sheathing. Each shake shall be attached with not fewer than two fasteners.

1507.9.8 Application. Wood shakes shall be laid with a side lap not less than $1^1/_2$ inches (38 mm) between joints in adjacent courses. Spacing between shakes in the same course shall be $^3/_8$ to $^5/_8$ inch (9.5 to 15.9 mm) for shakes and taper sawn shakes of naturally durable wood and shall be $^1/_4$ to $^3/_8$ inch (6.4 to 9.5 mm) for preservative taper sawn shakes. Weather exposure for wood shakes shall not exceed those set in Table 1507.9.8.

TABLE 1507.9.8—WOOD SHAKE WEATHER EXPOSURE AND ROOF SLOPE

ROOFING MATERIAL	LENGTH (inches)	GRADE	EXPOSURE (inches) 4:12 PITCH OR STEEPER
Shakes of naturally durable wood	18 24	No. 1 No. 1	7.5 10[a]
Preservative-treated taper sawn shakes of Southern yellow pine	18 24	No. 1 No. 1	7.5 10
	18 24	No. 2 No. 2	5.5 7.5
Taper sawn shakes of naturally durable wood	18 24	No. 1 No. 1	7.5 10
	18 24	No. 2 No. 2	5.5 7.5

For SI: 1 inch = 25.4 mm.
a. For 24-inch by 0.375-inch handsplit shakes, the maximum exposure is 7.5 inches.

1507.9.9 Flashing. At the juncture of the roof and vertical surfaces, flashing and counterflashing shall be provided in accordance with the manufacturer's installation instructions, and where of metal, shall be not less than 0.019-inch (0.48 mm) (No. 26 galvanized sheet gage) corrosion-resistant metal. The valley flashing shall extend not less than 11 inches (279 mm) from the centerline each way and have a splash diverter rib not less than 1 inch (25 mm) high at the flow line formed as part of the flashing. Sections of flashing shall have an end lap of not less than 4 inches (102 mm). For roof slopes of three units vertical in 12 units horizontal (25-percent slope) and over, the valley flashing shall have a 36-inch-wide (914 mm) underlayment of either one layer of Type I underlayment running the full length of the valley or a self-adhering polymer-modified bitumen sheet bearing a label indicating compliance with ASTM D1970, in addition to other required underlayment. In areas where the average daily temperature in January is 25°F (-4°C) or less or where there is a possibility of ice forming along the eaves causing a backup of water, the metal valley flashing underlayment shall be solidly cemented to the roofing underlayment for slopes under seven units vertical in 12 units horizontal (58-percent slope) or self-adhering polymer-modified bitumen sheet shall be installed.

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1507.9.10 Label required. Each bundle of shakes shall be identified by a label of an approved grading or inspection bureau or agency.

1507.10 Built-up roofs. The installation of built-up roofs shall comply with the provisions of this section.

1507.10.1 Slope. Built-up roofs shall have a design slope of not less than $^1/_4$ unit vertical in 12 units horizontal (2-percent slope) for drainage, except for coal-tar built-up roofs that shall have a design slope of not less than $^1/_8$ unit vertical in 12 units horizontal (1-percent slope).

1507.10.2 Material standards. Built-up roof covering materials shall comply with the standards in Table 1507.10.2 or UL 55A.

TABLE 1507.10.2—BUILT-UP ROOFING MATERIAL STANDARDS

MATERIAL STANDARD	STANDARD
Acrylic coatings used in roofing	ASTM D6083
Aggregate surfacing	ASTM D1863
Asphalt adhesive used in roofing	ASTM D3747
Asphalt cements used in roofing	ASTM D2822; D3019; D4586
Asphalt-coated glass fiber base sheet	ASTM D4601
Asphalt coatings used in roofing	ASTM D1227; D2823; D2824; D4479
Asphalt glass felt	ASTM D2178
Asphalt primer used in roofing	ASTM D41
Asphalt-saturated and asphalt-coated organic felt base sheet	ASTM D2626
Asphalt-saturated organic felt (perforated)	ASTM D226
Asphalt used in roofing	ASTM D312
Coal-tar cements used in roofing	ASTM D4022; D5643
Coal-tar saturated organic felt	ASTM D227
Coal-tar pitch used in roofing	ASTM D450; Type I or II
Coal-tar primer used in roofing, dampproofing and waterproofing	ASTM D43
Glass mat, coal-tar	ASTM D4990
Glass mat, venting type	ASTM D4897
Mineral-surfaced inorganic cap sheet	ASTM D3909
Thermoplastic fabrics used in roofing	ASTM D5665, D5726

1507.11 Modified bitumen roofing. The installation of modified bitumen roofing shall comply with the provisions of this section.

1507.11.1 Slope. Modified bitumen roofing shall have a design slope of not less than $^1/_4$ unit vertical in 12 units horizontal (2-percent slope) for drainage.

1507.11.2 Material standards. Modified bitumen roofing materials shall comply with ASTM D6162, ASTM D6163, ASTM D6164, ASTM D6222, ASTM D6223, ASTM D6298 or ASTM D6509.

1507.11.2.1 Base sheet. A base sheet that complies with the requirements of Section 1507.11.2, ASTM D1970 or ASTM D4601 shall be permitted to be used with a modified bitumen cap sheet.

1507.12 Single-ply roofing. The installation of single-ply roofing shall comply with the provisions of this section.

1507.12.1 Slope. Single-ply membrane roofs shall have a design slope of not less than $^1/_4$ unit vertical in 12 units horizontal (2-percent slope) for drainage.

1507.12.2 Material standards. Single-ply roof coverings shall comply with the material standards in Table 1507.12.2.

TABLE 1507.12.2—SINGLE-PLY ROOFING MATERIAL STANDARDS

MATERIAL	MATERIAL STANDARD
Chlorosulfonated polyethylene (CSPE) or polyisobutylene (PIB)	ASTM D5019
Ethylene propylene diene monomer (EPDM)	ASTM D4637
Ketone Ethylene Ester (KEE)	ASTM D6754
Polyvinyl Chloride (PVC) or (PVC/KEE)	ASTM D4434
Thermoplastic polyolefin (TPO)	ASTM D6878

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1507.12.3 Ballasted low-slope roofs. Ballasted low-slope roofs shall be installed in accordance with this section and Section 1504.5. Stone used as ballast shall comply with ASTM D448 or ASTM D7655.

1507.13 Sprayed polyurethane foam roofing. The installation of sprayed polyurethane foam roofing shall comply with the provisions of this section.

1507.13.1 Slope. Sprayed polyurethane foam roofs shall have a design slope of not less than $^1/_4$ unit vertical in 12 units horizontal (2-percent slope) for drainage.

1507.13.2 Material standards. Spray-applied polyurethane foam insulation shall comply with ASTM C1029 Type III or IV or ASTM D7425.

1507.13.3 Application. Foamed-in-place roof insulation shall be installed in accordance with the manufacturer's instructions. A liquid-applied protective coating that complies with Table 1507.13.3 shall be applied not less than 2 hours nor more than 72 hours following the application of the foam.

TABLE 1507.13.3—PROTECTIVE COATING MATERIAL STANDARDS

MATERIAL	STANDARD
Acrylic coating	ASTM D6083
Silicone coating	ASTM D6694
Moisture-cured polyurethane coating	ASTM D6947

1507.13.4 Foam plastics. Foam plastic materials and installation shall comply with Chapter 26.

1507.14 Liquid-applied roofing. The installation of liquid-applied roofing shall comply with the provisions of this section.

1507.14.1 Slope. Liquid-applied roofing shall have a design slope of not less than $^1/_4$ unit vertical in 12 units horizontal (2-percent slope).

1507.14.2 Material standards. Liquid-applied roofing shall comply with ASTM C836, ASTM C957 or ASTM D3468.

1507.14.3 Application. Liquid-applied roofing shall be installed in accordance with this chapter and the manufacturer's installation instructions.

1507.15 Vegetative roofs and landscaped roofs. Vegetative roofs and landscaped roofs shall comply with the requirements of this chapter, Section 1604.12 and the *California Fire Code.*

[BF] 1507.15.1 Structural fire resistance. The structural frame and roof construction supporting the load imposed on the roof by the vegetative roof or landscaped roofs shall comply with the fire-resistance-rating requirements of Table 601.

1507.16 BIPV shingles. The installation of building-integrated photovoltaic (BIPV) shingles shall comply with the provisions of this section.

1507.16.1 Deck requirements. BIPV shingles shall be applied to a solid or closely fitted deck, except where the shingles are specifically designed to be applied over spaced sheathing.

1507.16.2 Deck slope. BIPV shingles shall be installed on roof slopes of not less than 2 units vertical in 12 units horizontal (2:12).

1507.16.3 Underlayment. Underlayment shall comply with Section 1507.1.1.

1507.16.4 Ice barrier. Where required, ice barriers shall comply with Section 1507.1.2.

1507.16.5 Fasteners. Fasteners for BIPV shingles shall be galvanized, stainless steel, aluminum or copper roofing nails, minimum 12-gage [0.105 inch (2.67 mm)] shank with a minimum $^3/_8$-inch-diameter (9.5 mm) head, of a length to penetrate through the roofing materials and not less than $^3/_4$ inch (19.1 mm) into the roof sheathing. Where the roof sheathing is less than $^3/_4$ inch (19.1 mm) thick, the nails shall penetrate through the sheathing. Fasteners shall comply with ASTM F1667.

1507.16.6 Material standards. BIPV shingles shall be listed and labeled in accordance with UL 7103.

1507.16.7 Attachment. BIPV shingles shall be attached in accordance with the manufacturer's installation instructions.

1507.16.8 Wind resistance. BIPV shingles shall comply with the classification requirements of Table 1504.2 for the appropriate maximum basic wind speed.

1507.16.9 Flashing. Flashing for BIPV shingles shall be installed in accordance with the roof covering manufacturer's installation instructions to prevent water from entering the wall and roof through joints in copings, through moisture-permeable materials and at intersections with parapet walls and other penetrations through the roof plane.

1507.17 Building-integrated photovoltaic roof panels. The installation of BIPV roof panels shall comply with the provisions of this section.

1507.17.1 Deck requirements. BIPV roof panels shall be applied to a solid or closely fitted deck, except where the roof covering is specifically designed to be applied over spaced sheathing.

1507.17.2 Deck slope. BIPV roof panels shall be used only on roof slopes of 2 units vertical in 12 units horizontal (2:12) or greater.

1507.17.3 Underlayment. Underlayment shall comply with ASTM D226, ASTM D4869 or ASTM D6757.

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1507.17.4 Underlayment application. Underlayment shall be applied shingle fashion, parallel to and starting from the eave, lapped 2 inches (51 mm) and fastened sufficiently to hold in place.

1507.17.4.1 High-wind attachment. Underlayment applied in areas subject to high winds [V_{asd} greater than 110 mph (49 m/s) as determined in accordance with Section 1609.3.1] shall be applied in accordance with the manufacturer's instructions. Fasteners shall be applied along the overlap at not more than 36 inches (914 mm) on center. Underlayment installed where V_{asd} is not less than 120 mph (54 m/s) shall comply with ASTM D226, Type III, ASTM D4869, Type IV or ASTM D6757. The underlayment shall be attached in a grid pattern of 12 inches (305 mm) between side laps with a 6-inch (152 mm) spacing at the side laps. The underlayment shall be applied in accordance with Section 1507.1.1 except all laps shall be not less than 4 inches (102 mm). Underlayment shall be attached using cap nails or cap staples. Caps shall be metal or plastic with a nominal head diameter of not less than 1 inch (25.4 mm). Metal caps shall have a thickness of not less than 0.010 inch (0.25 mm). Power-driven metal caps shall have a thickness of not less than 0.010 inch (0.25 mm). Thickness of the outside edge of plastic caps shall be not less than 0.035 inch (0.89 mm). The cap nail shank shall be not less than 0.083 inch (2.11 mm) for ring shank cap nails and 0.091 inch (2.31 mm) for smooth shank cap nails. Staple gage shall be not less than 21 gage [0.0.2 inch (0.81 mm)]. Cap nail shank and cap staple legs shall have a length sufficient to penetrate through-the-roof sheathing or not less than $^3/_4$ inch (19.1 mm) into the roof sheathing.

Exception: As an alternative, adhered underlayment complying with ASTM D1970 shall be permitted.

1507.17.4.2 Ice barrier. In areas where there has been a history of ice forming along the eaves causing a back-up of water, an ice barrier consisting of not fewer than two layers of underlayment cemented together or of a self-adhering polymer modified bitumen sheet shall be used instead of normal underlayment and extend from the lowest edges of all roof surfaces to a point not less than 24 inches (610 mm) inside the exterior wall line of the building.

Exception: Detached accessory structures that do not contain conditioned floor area.

1507.17.5 Material standards. BIPV roof panels shall be listed and labeled in accordance with UL 7103.

1507.17.6 Attachment. BIPV roof panels shall be attached in accordance with the manufacturer's installation instructions.

1507.17.7 Flashing. Flashing for BIPV roof panels shall be installed in accordance with the roof covering manufacturer's installation instructions to prevent water from entering the wall and roof through joints in copings, through moisture-permeable materials and at intersections with parapet walls and other penetrations through the roof plane.

SECTION 1508—ROOF INSULATION

[BF] 1508.1 General. The use of above-deck thermal insulation shall be permitted provided that such insulation is covered with an approved roof covering and passes the tests of NFPA 276 or UL 1256 when tested as an assembly.

Exceptions:

1. Foam plastic roof insulation shall conform to the material and installation requirements of Chapter 26.
2. Where a concrete or composite metal and concrete roof deck is used and the above-deck thermal insulation is covered with an approved roof covering.

[BF] 1508.2 Material standards. Above-deck thermal insulation board shall comply with the standards in Table 1508.2.

[BF] TABLE 1508.2—MATERIAL STANDARDS FOR ROOF INSULATION

MATERIAL	STANDARD
Cellular glass board	ASTM C552 or ASTM C1902
Composite boards	ASTM C1289, Type III, IV, V or VII
Expanded polystyrene	ASTM C578
Extruded polystyrene	ASTM C578
Fiber-reinforced gypsum board	ASTM C1278
Glass-faced gypsum board	ASTM C1177
High-density polyisocyanurate board	ASTM C1289, Type II, Class 4
Mineral fiber insulation board	ASTM C726
Perlite board	ASTM C728
Polyisocyanurate board	ASTM C1289, Type I or II
Wood fiberboard	ASTM C208, Type II

SECTION 1509—ROOF COATINGS

1509.1 General. The installation of a roof coating on a roof covering shall comply with the requirements of Section 1505 and this section.

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1509.2 Material standards. Roof coating materials shall comply with the standards in Table 1509.2.

TABLE 1509.2—ROOF COATING MATERIAL STANDARDS

MATERIAL	STANDARD
Acrylic coating	ASTM D6083
Asphaltic emulsion coating	ASTM D1227
Asphalt coating	ASTM D2823
Asphalt roof coating	ASTM D4479
Aluminum-pigmented asphalt coating	ASTM D2824
Silicone coating	ASTM D6694
Moisture-cured polyurethane coating	ASTM D6947

SECTION 1510—RADIANT BARRIERS INSTALLED ABOVE DECK

[BF] 1510.1 General. A radiant barrier installed above a deck shall comply with Sections 1510.2 through 1510.4.

[BF] 1510.2 Fire testing. Radiant barriers shall be permitted for use above decks where the radiant barrier is covered with an approved roof covering and the system consisting of the radiant barrier and the roof covering complies with the requirements of either FM 4450 or UL 1256.

[BF] 1510.3 Installation. The low emittance surface of the radiant barrier shall face the continuous airspace between the radiant barrier and the roof covering.

[BF] 1510.4 Material standards. A radiant barrier installed above a deck shall comply with ASTM C1313/C1313M.

SECTION 1511—ROOFTOP STRUCTURES

[BG] 1511.1 General. The provisions of this section shall govern the construction of rooftop structures.

1511.1.1 Area limitation. The aggregate area of penthouses and other enclosed rooftop structures shall not exceed one-third the area of the supporting roof deck. Such penthouses and other enclosed rooftop structures shall not be required to be included in determining the building height, number of stories or building area as regulated by Section 503.1. The area of such penthouses shall not be included in determining the fire area specified in Section 901.7.

[BG] 1511.2 Penthouses. Penthouses in compliance with Sections 1511.2.1 through 1511.2.4 shall be considered as a portion of the story directly below the roof deck on which such penthouses are located. Other penthouses shall be considered as an additional story of the building.

[BG] 1511.2.1 Height above roof deck. Penthouses constructed on buildings of other than Type I construction shall not exceed 18 feet (5486 mm) in height above the roof deck as measured to the average height of the roof of the penthouse. Penthouses located on the roof of buildings of Type I construction shall not be limited in height.

Exception: Where used to enclose tanks or elevators that travel to the roof level, penthouses shall be permitted to have a maximum height of 28 feet (8534 mm) above the roof deck.

[BG] 1511.2.2 Use limitations. Penthouses shall not be used for purposes other than the shelter of mechanical or electrical equipment, tanks, elevators and related machinery, stairways or vertical shaft openings in the roof assembly, including ancillary spaces used to access elevators and stairways.

[BG] 1511.2.3 Weather protection. Provisions such as louvers, louver blades or flashing shall be made to protect the mechanical and electrical equipment and the building interior from the elements.

[BG] 1511.2.4 Type of construction. Penthouses shall be constructed of building element materials as required for the type of construction of the building. Penthouse exterior walls and roof construction shall have a fire-resistance rating as required for the type of construction of the building. Supporting construction of such exterior walls and roof construction shall have a fire-resistance rating not less than required for the exterior wall or roof supported.

Exceptions:

1. On buildings of Type I construction, the exterior walls and roofs of penthouses with a fire separation distance greater than 5 feet (1524 mm) and less than 20 feet (6096 mm) shall be permitted to have not less than a 1-hour fire-resistance rating. The exterior walls and roofs of penthouses with a fire separation distance of 20 feet (6096 mm) or greater shall not be required to have a fire-resistance rating.
2. On buildings of Type I construction two stories or less in height above grade plane or of Type II construction, the exterior walls and roofs of penthouses with a fire separation distance greater than 5 feet (1524 mm) and less than 20 feet (6096 mm) shall be permitted to have not less than a 1-hour fire-resistance rating or a lesser fire-resistance rating as required by Table 705.5 and be constructed of fire-retardant-treated wood. The exterior walls and roofs of penthouses with a fire separation distance of 20 feet (6096 mm) or greater shall be permitted to be constructed of fire-

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retardant-treated wood and shall not be required to have a fire-resistance rating. Interior framing and walls shall be permitted to be constructed of fire-retardant-treated wood.

3. On buildings of Type III, IV or V construction, the exterior walls of penthouses with a fire separation distance greater than 5 feet (1524 mm) and less than 20 feet (6096 mm) shall be permitted to have not less than a 1-hour fire-resistance rating or a lesser fire-resistance rating as required by Table 705.5. On buildings of Type III, IV or VA construction, the exterior walls of penthouses with a fire separation distance of 20 feet (6096 mm) or greater shall be permitted to be of heavy timber construction complying with Sections 602.4 and 2304.11 or noncombustible construction or fire-retardant-treated wood and shall not be required to have a fire-resistance rating.

[BG] 1511.3 Tanks. Tanks having a capacity of more than 500 gallons (1893 L) located on the roof deck of a building shall be supported on masonry, reinforced concrete, steel or heavy timber construction complying with Section 2304.11 provided that, where such supports are located in the building above the lowest story, the support shall be fire-resistance rated as required for Type IA construction.

[BG] 1511.3.1 Valve and drain. In the bottom or on the side near the bottom of the tank, a pipe or outlet, fitted with a suitable quick-opening valve for discharging the contents into a drain in an emergency shall be provided.

[BG] 1511.3.2 Location. Tanks shall not be placed over or near a stairway or an elevator shaft, unless there is a solid roof or floor underneath the tank.

[BG] 1511.3.3 Tank cover. Unenclosed roof tanks shall have covers sloping toward the perimeter of the tanks.

[BG] 1511.4 Cooling towers. Cooling towers located on the roof deck of a building and greater than 250 square feet (23.2 m^2) in base area or greater than 15 feet (4572 mm) in height above the roof deck, as measured to the highest point on the cooling tower, where the roof is greater than 50 feet (15 240 mm) in height above grade plane shall be constructed of noncombustible materials. The base area of cooling towers shall not exceed one-third the area of the supporting roof deck.

Exception: Drip boards and the enclosing construction shall be permitted to be of wood not less than 1 inch (25 mm) nominal thickness, provided that the wood is covered on the exterior of the tower with noncombustible material.

[BG] 1511.5 Towers, spires, domes and cupolas. Towers, spires, domes and cupolas shall be of a type of construction having fire-resistance ratings not less than required for the building on top of which such tower, spire, dome or cupola is built. Towers, spires, domes and cupolas greater than 85 feet (25 908 mm) in height above grade plane as measured to the highest point on such structures, and either greater than 200 square feet (18.6 m^2) in horizontal area or used for any purpose other than a belfry or an architectural embellishment, shall be constructed of and supported on Type I or II construction.

[BG] 1511.5.1 Noncombustible construction required. Towers, spires, domes and cupolas greater than 60 feet (18 288 mm) in height above the highest point at which such structure contacts the roof as measured to the highest point on such structure, or that exceeds 200 square feet (18.6 m^2) in area at any horizontal section, or which is intended to be used for any purpose other than a belfry or architectural embellishment, or is located on the top of a building greater than 50 feet (1524 mm) in building height shall be constructed of and supported by noncombustible materials and shall be separated from the building below by construction having a fire-resistance rating of not less than 1.5 hours with openings protected in accordance with Section 711. Such structures located on the top of a building greater than 50 feet (15 240 mm) in building height shall be supported by noncombustible construction.

[BG] 1511.5.2 Towers and spires. Enclosed towers and spires shall have exterior walls constructed as required for the building on top of which such towers and spires are built. The roof covering of spires shall be not less than the same class of roof covering required for the building on top of which the spire is located.

[BG] 1511.6 Mechanical equipment screens. Mechanical equipment screens shall be constructed of the materials specified for the exterior walls in accordance with the type of construction of the building. Where the fire separation distance is greater than 5 feet (1524 mm), mechanical equipment screens shall not be required to comply with the fire-resistance rating requirements.

[BG] 1511.6.1 Height limitations. Mechanical equipment screens shall not exceed 18 feet (5486 mm) in height above the roof deck, as measured to the highest point on the mechanical equipment screen.

Exception: Where located on buildings of Type IA construction, the height of mechanical equipment screens shall not be limited.

[BG] 1511.6.2 Type I, II, III or IV construction. Regardless of the requirements in Section 1511.6, mechanical equipment screens that are located on the roof decks of buildings of Type I, II, III or IV construction shall be permitted to be constructed of combustible materials in accordance with any one of the following limitations:

1. The fire separation distance shall be not less than 20 feet (6096 mm) and the height of the mechanical equipment screen above the roof deck shall not exceed 4 feet (1219 mm) as measured to the highest point on the mechanical equipment screen.
2. The fire separation distance shall be not less than 20 feet (6096 mm) and the mechanical equipment screen shall be constructed of fire-retardant-treated wood complying with Section 2303.2 for exterior installation.
3. Where exterior wall covering panels are used, the panels shall have a flame spread index of 25 or less when tested in the minimum and maximum thicknesses intended for use, with each face tested independently in accordance with ASTM E84 or UL 723. The panels shall be tested in the minimum and maximum thicknesses intended for use in accordance with, and shall comply with the acceptance criteria of, NFPA 285 and shall be installed as tested. Where the panels are tested as part of an exterior wall assembly in accordance with NFPA 285, the panels shall be installed on the face of the

mechanical equipment screen supporting structure in the same manner as they were installed on the tested exterior wall assembly.

[BG] 1511.6.3 Type V construction. The height of mechanical equipment screens located on the roof decks of buildings of Type V construction, as measured from grade plane to the highest point on the mechanical equipment screen, shall be permitted to exceed the maximum building height allowed for the building by other provisions of this code where complying with any one of the following limitations, provided that the fire separation distance is greater than 5 feet (1524 mm):

1. Where the fire separation distance is not less than 20 feet (6096 mm), the height above grade plane of the mechanical equipment screen shall not exceed 4 feet (1219 mm) more than the maximum building height allowed.
2. The mechanical equipment screen shall be constructed of noncombustible materials.
3. The mechanical equipment screen shall be constructed of fire-retardant-treated wood complying with Section 2303.2 for exterior installation.
4. Where the fire separation distance is not less than 20 feet (6096 mm), the mechanical equipment screen shall be constructed of materials having a flame spread index of 25 or less when tested in the minimum and maximum thicknesses intended for use with each face tested independently in accordance with ASTM E84 or UL 723.

[BG] 1511.7 Other rooftop structures. Rooftop structures not regulated by Sections 1511.2 through 1511.6 shall comply with Sections 1511.7.1 through 1511.7.6, as applicable.

[BG] 1511.7.1 Aerial supports. Aerial supports shall be constructed of noncombustible materials.

Exception: Aerial supports not greater than 12 feet (3658 mm) in height as measured from the roof deck to the highest point on the aerial supports shall be permitted to be constructed of combustible materials.

[BG] 1511.7.2 Bulkheads. Bulkheads used for the shelter of mechanical or electrical equipment or vertical shaft openings in the roof assembly shall comply with Section 1511.2 as penthouses. Bulkheads used for any other purpose shall be considered as an additional story of the building.

[BG] 1511.7.3 Dormers. Dormers shall be of the same type of construction as required for the roof in which such dormers are located or the exterior walls of the building.

[BG] 1511.7.4 Fences. Fences and similar structures shall comply with Section 1511.6 as mechanical equipment screens.

[BG] 1511.7.5 Flagpoles. Flagpoles and similar structures shall not be required to be constructed of noncombustible materials and shall not be limited in height or number.

[BG] 1511.7.6 Lightning protection systems. Lightning protection system components shall be installed in accordance with Sections 1511.7.6.1, 1511.7.6.2 and 2703.

[BG] 1511.7.6.1 Installation on metal edge systems or gutters. Lightning protection system components attached to ANSI/SPRI/FM 4435/ES-1 or ANSI/SPRI GT-1 tested metal edge systems or gutters shall be installed with compatible brackets, fasteners or adhesives, in accordance with the metal edge systems or gutter manufacturer's installation instructions. Where the metal edge system or gutter manufacturer is unknown, installation shall be as directed by a registered design professional.

[BG] 1511.7.6.2 Installation on roof coverings. Lightning protection system components directly attached to or through the roof covering shall be installed in accordance with this chapter and the roof covering manufacturer's installation instructions. Flashing shall be installed in accordance with the roof assembly manufacturer's installation instructions and Sections 1503.2 and 1507 where the lightning protection system installation results in a penetration through the roof covering. Where the roof covering manufacturer is unknown, installation shall be as directed by a registered design professional.

[BG] 1511.8 Structural fire resistance. The structural frame and roof construction supporting loads imposed upon the roof by any rooftop structure shall comply with the requirements of Table 601. The fire-resistance reduction permitted by Table 601, Note a, shall not apply to roofs containing rooftop structures.

[BG] 1511.9 Raised-deck systems installed over a roof assembly. Raised-deck systems installed above a roof assembly shall comply with Sections 1511.9.1 through 1511.9.5.

[BG] 1511.9.1 Installation. The installation of a raised-deck system shall comply with all of the following:

1. The perimeter of the raised-deck system shall be surrounded on all sides by walls or by a noncombustible enclosure approved to prevent fire intrusion below the raised-deck system. The wall or enclosure shall extend at least from the roof assembly to the top surface of the raised-deck system. The enclosure shall not impede roof drainage in accordance with Section 1511.9.5.
2. A raised-deck system shall be installed above a listed roof assembly.

   Exception: Where the roof assembly is not required to have a fire classification in accordance with Section 1505.2.
3. A raised-deck system shall be installed in accordance with the manufacturer's installation instructions.
4. A raised-deck system shall not impede the operation of plumbing or mechanical vents, exhaust, air inlets or roof drains. Where required, access for inspection, cleaning or maintenance shall be provided.

[BG] 1511.9.2 Fire classification. The raised-deck system shall be listed and identified with a fire classification in accordance with Section 1505 and shall be tested in accordance with either Section 1511.9.2.1 or 1511.9.2.2.

[BG] 1511.9.2.1 Fire testing of the raised deck system installed over a classified roof assembly. The raised-deck system shall be tested separately from the roof assembly over which it is installed. The fire classification of the raised-deck system shall be not less than the fire classification for the roof assembly over which it is installed.

Exception: Where the decking or pavers of the raised-deck system consists of brick, masonry, concrete or other noncombustible materials, fire testing of the raised-deck system is not required.

[BG] 1511.9.2.2 Fire testing of the raised deck system together with the roof assembly. The roof assembly and the raised-deck system shall be tested together.

[BG] 1511.9.3 Pedestals or supports. The pedestals or supports for the raised-deck system shall be installed in accordance with manufacturer's installation instructions.

[BG] 1511.9.4 Structural requirements. The raised-deck system shall be designed for all applicable loads in accordance with Chapter 16 and performance requirements in Section 1504.5.

[**BG] 1511.9.5 Roof drainage.** The raised-deck system, including the wall or enclosure between the roof assembly and the raised deck, shall be designed and installed to allow for the operation of the roof drainage system as required by Section 1502 and the *California Plumbing Code.* The roof structure shall be designed to support any standing water resulting from the installation of the raised-deck system.

[BG] 1511.9.6 Accessibility and egress. The raised-deck system shall be accessible in accordance with *Chapters 11A or 11B, as applicable,* and means of egress shall be provided in accordance with Chapter 10.

1511.10 Photovoltaic (PV) panel systems. [BSC, DSA-SS, DSA-SS/CC, HCD 1 & HCD 2, OSHPD 1, 1R, 2, 4 & 5] *Rooftop-mounted photovoltaic panels and modules shall be listed and labeled in accordance with Section 3111.3.1 and installed in accordance with the manufacturer's printed installation instructions.*

1511.10.1 Design. [BSC, DSA-SS, DSA-SS/CC, HCD 1 & HCD 2, OSHPD 1, 1R, 2, 4 & 5] *Supports and attachments of photovoltaic panels to the roof structure, the panels, modules and components shall be designed in accordance with this code.*

1. *Seismic design shall be in accordance with ASCE 7 Section 13.6.12.*
2. *Wind design pressures shall be determined from ASCE 7 Section 29.4.3 or 29.4.4 using effective wind area in accordance with ASCE 7 Section 26.2.*

Construction documents for the supports and attachments shall be submitted to the enforcement agency for approval.

SECTION 1512—REROOFING

1512.1 General. Materials and methods of application used for recovering or replacing an existing roof covering shall comply with the requirements of Chapter 15.

Exceptions:

1. Roof replacement or roof recover of existing low-slope roof coverings shall not be required to meet the minimum design slope requirement of $^1/_4$ unit vertical in 12 units horizontal (2-percent slope) in Section 1507 for roofs that provide positive roof drainage and meet the requirements of Sections 1608.3 and 1611.2.
2. Recovering or replacing an existing roof covering shall not be required to meet the requirement for secondary (emergency overflow) drains or scuppers in Section 1502.2 for roofs that provide for positive roof drainage and meet the requirements of Sections 1608.3 and 1611.2. For the purposes of this exception, existing secondary drainage or scupper systems required in accordance with this code shall not be removed unless they are replaced by secondary drains or scuppers designed and installed in accordance with Section 1502.2.

1512.2 Roof replacement. Roof replacement shall include the removal of all existing layers of roof assembly materials down to the roof deck.

Exceptions:

1. Where the existing roof assembly includes an ice barrier membrane that is adhered to the roof deck and the existing sheathing is not water-soaked or deteriorated to the point that it is not adequate as a base for additional roofing, the existing ice barrier membrane shall be permitted to remain in place and covered with an additional layer of ice barrier membrane in accordance with Section 1507 where permitted by the roof covering manufacturer and new ice barrier underlayment manufacturer.
2. Where the existing roof includes a self-adhered underlayment and the existing sheathing is not water-soaked or deteriorated to the point that it is not adequate as a base for additional roofing, the existing self-adhered underlayment shall be permitted to remain in place and covered with an underlayment complying with Tables 1507.1.1(1), 1507.1.1(2) and 1507.1.1(3).
3. Where the existing roof includes one layer of self-adhered underlayment and the existing layer cannot be removed without damaging the roof deck, a second layer of self-adhered underlayment is permitted to be installed over the existing self-adhered underlayment provided that the following conditions are met:
   3.1. It is permitted by the roof covering manufacturer and self-adhered underlayment manufacturer.
   3.2. The existing sheathing is not water-soaked or deteriorated to the point that it is not adequate as a base for additional roofing.

3.3. The second layer of self-adhered underlayment is installed such that buildup of material at walls, valleys, roof edges, end laps and side laps does not exceed two layers.

1512.3 Roof recover. The installation of a new roof covering over an existing roof covering shall be permitted where any of the following conditions occur:

1. Where the new roof covering is installed in accordance with the roof covering manufacturer's approved instructions.
2. Complete and separate roofing systems, such as standing-seam metal roof panel systems, that are designed to transmit the roof loads directly to the building's structural system and that do not rely on existing roofs and roof coverings for support, shall not require the removal of existing roof coverings.
3. Metal panel, metal shingle and concrete and clay tile roof coverings shall be permitted to be installed over existing wood shake roofs when applied in accordance with Section 1512.3.1.
4. The application of a new protective roof coating over an existing protective roof coating, metal roof panel, built-up roof, spray polyurethane foam roofing system, metal roof shingles, mineral-surfaced roll roofing, modified bitumen roofing or thermoset and thermoplastic single-ply roofing shall be permitted without tear off of existing roof coverings.

Exception: A roof recover shall not be permitted where any of the following conditions occur:

1. The existing roof or roof covering is water-soaked or has deteriorated to the point that the existing roof or roof covering is not adequate as a base for additional roofing.
2. The existing roof covering is slate, clay, cement or asbestos-cement tile.
3. The existing roof has two or more applications of any type of roof covering.

1512.3.1 Roof recovering over wood shingles or shakes. Where the application of a new roof covering over wood shingle or shake roofs creates a combustible concealed space, the entire existing surface shall be covered with gypsum panel products, mineral fiber, glass fiber or other approved materials securely fastened in place.

1512.4 Reinstallation of materials. Existing slate, clay or cement tile shall be permitted for reinstallation, except that damaged, cracked or broken slate or tile shall not be reinstalled. Existing vent flashing, metal edgings, drain outlets, collars and metal counter-flashings shall not be reinstalled where rusted, damaged or deteriorated. Existing ballast that is damaged, cracked or broken shall not be reinstalled. Existing aggregate surfacing materials from built-up roofs shall not be reinstalled.

1512.5 Flashings. Flashings shall be reconstructed in accordance with approved manufacturer's installation instructions. Metal flashing to which bituminous materials are to be adhered shall be primed prior to installation.

SECTION 1513-[DSA-SS & DSA-SS/CC, OSHPD 1, 1R, 2, 4 & 5]
SEISMIC ANCHORAGE OF SLATE SHINGLE, CLAY AND CONCRETE TILE ROOF COVERINGS

1513.1 Fasteners. *Nails shall be long enough to penetrate into the sheathing $^{3}/_{4}$ inch (19 mm). Where sheathing is less than $^{3}/_{4}$ inch (19 mm) in thickness, nails shall be driven into supports, unless nails with ring shanks are used.*

All fasteners shall be corrosion resistant and fabricated of copper, stainless steel or brass, or shall have a hot dipped galvanized coating not less than 1.0 ounce of zinc per square foot (305 gm/m^2).

Nails for slate shingles and clay or concrete tile shall be copper, brass or stainless steel with gage and length per common ferrous nails.

1513.2 Wire. *Wire for attaching slate shingles and clay or concrete tile shall be copper, brass or stainless steel capable of supporting four times the weight of tile.*

Wire supporting a single tile or shingle shall not be smaller than $^{1}/_{16}$ inch (1.6 mm) in diameter. Continuous wire ties supporting more than one tile shall not be smaller than 0.084 inch (2 mm) in diameter.

1513.3 Metal strips. *Metal strips for attaching slate shingles and clay or concrete tile shall be copper, brass or stainless steel capable of supporting four times the weight of tile.*

1513.4 Clay or concrete tiles. *Clay or concrete tile shall be installed in accordance with Table 1507.3.7 and as described herein.*

1. *On wood roofs or roofs of other material to which wood strips are secured, every cover or top tile when fastened with nails shall be nailed directly into $1^{1}/_{4}$ inches (32 mm) sound grain soft wood strips of sufficient height to support the tile.*

   Pan or bottom tiles shall be nailed directly to the roof sheathing or to wood strips. Wood strips shall be secured to the roof by nails spaced not over 12 inches (305 mm) apart.
2. *On concrete roofs, wires shall be secured in place by wire loops embedded into the concrete not less than 2 inches (51 mm). The wire loops shall be spaced not more than 36 inches (914 mm) on center parallel to the eaves, and spaced vertically to allow for the minimum 3 inches (76 mm) lapping of the tile.*
3. *Where continuous ties of twisted wire, interlocking wires or metal strips extending from the ridge to eave are used to attach tile, the ties shall be attached to the roof construction at the ridge, eave and at intervals not exceeding 10 feet 0 inch (3048 mm) on center. The ties within 2 feet 0 inch (610 mm) of the rake shall be attached at intervals of 5 feet 0 inch (1524 mm).*

   Attachment for continuous ties shall be nails, screws staples or approved clips of the same material as the ties, and shall not be subjected to withdrawal forces. Attachments for continuous ties shall have an allowable working stress shear resistance of not less than twice the dead weight of the tile tributary to the attachment, but not less than 300 pounds (136 kg).

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4. *Tile with projecting anchor lugs at the bottom of the tiles shall be held in position by means of 1- inch by 2-inch (25mm by 51mm) wood stripping nailed to the roof sheathing over the underlay.*
5. *Clay or concrete tile on roofs with slopes exceeding 24 units vertical in 12 units horizontal (200 percent slope) shall be attached as required for veneer in Chapter 14. The nose of all tiles shall be securely fastened.*
6. *Clay or concrete tile shall have a minimum of two fasteners per tile. Tiles that are 8 inches (203 mm) in width or less are permitted to be fastened at the center of the head with one fastener per tile.*
7. *Interlocking clay or concrete tile shall have a minimum of one nail near center of head or two wire ties per tile.*

1513.5 Slate shingles. *Slate shingles on roofs with slopes exceeding 24 units vertical in 12 units horizontal (200 percent slope) shall be attached as required for veneer per Chapter 14.*

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HISTORY NOTE APPENDIX

2025 California Building Code
California Code of Regulations, Title 24, Part 2 Volume 1

HISTORY:

For prior code history, see the History Note Appendix to the *California Building Code,* 2022 Triennial Edition, effective January 1, 2023.

1. (BSC 05/24, DSA-SS 05/24, DSA-AC 01/24, HCD 05/24, HCD 1-AC 01/24, SFM 04/24, DCA 01/24, OSHPD 04/24 and OSHPD 05/24)—Adoption by reference of the 2024 *International Building Code* with necessary amendments to become the 2025 *California Building Code*, and repeal of the 2021 edition of the *International Building Code*. Approved by the California Building Standards Commission on February 26, 2025, filed with Secretary of State on March 7, 2025, and effective on January 1, 2026.
2. Erratum to address miscellaneous corrections in Matrix Adoption Tables and throughout Chapters 1, 2, 3, 4, 5, 7, 9, 10, 11B, 12 and 15, effective January 1, 2026.

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